

NEWS

IBM offers VM/SP with native support for SNA

By John Ditz
Ch. Staff

IBM recently announced enhancements for its VM/SP that enable VM-based systems to provide native support for Systems Network Architecture (SNA) products.

Originally hinted at in a statement of intent made last year, the VM/SP and associated communications software enhancements will not be available until the third quarter of 1985.

When available, the upgraded software will eliminate the current requirement with VM to install and maintain either MVS or DOS as a guest operating system in order to tie VM-based systems into an SNA network.

Analysts concurred that the streamlining of SNA support is important primarily because of the increasing popularity of VM and IBM's reliance on the operating system for many office applications and information center products. Another benefit of bringing VM into the SNA fold is that terminals and applications in existing SNA networks can access VM-based applications and vice versa.

Native SNA support is provided in VM/SP Release 4 with the creation of the VM/Group Control

System. This provides a direct interface for an upgraded version of the Vman access method and associated communications network management products, the company reported. An ancillary feature with this release is simplified logon procedures through prompting.

The new Version 3 of ACF/Vam, in conjunction with VM/SP Release 4, provides support for. Among other things, upgraded versions of the VM/SP High-Performance Option (HPO), the Remote Spooling Communications Subsystem (RSCS) and the Network Communications Control Facility (NCCF). Briefly:

■ Release 4 of the VM/SP HPO provides native SNA support and other VM/SP Release 4 enhancements and is said to contain all functions available in VM/SP HPO through Release 3.4.

■ RSCS Networking Version 2 provides VM hosts with SNA Network Job Entry systems and SNA/3270 printer support.

■ Version 2 of NCCF extends the operation and management facilities for controlling and managing networks in the VM environment.

While native support for these products removes the need to maintain guest operating sys-

tems on VM hosts to operate within SNA, few users will drop the guest systems software, according to David Macchella, an analyst with International Data Corp., a research firm in Framingham, Mass. Instead, they will use the new version to pull stand-alone VM systems into the SNA realm.

This will enable users within the network to use a single terminal to access applications on VM- and MVS-based systems, noted Dale Kutnick, executive director of the Yankee Group, a market research company in Boston.

He added that "support of VM in the SNA environment is going to be critical for office applications like the (Distributed Office Support System, Document Interchange Architecture/Document Content Architecture) and the movement of documents within the IBM world." Kutnick also said that VM is becoming IBM's major information center product, figuring heavily in IBM's efforts to extend access to corporate resources to the end user.

Prices are: VM/SP Release 4, \$414; ACF/Vam Version 3, \$3,300 initial license fee and \$1,100/mo.; RSCS Version 2, \$4,300 initially and \$315/mo.; VM/SP HPO Release 4, \$4,900 and \$1,600/mo.; and NCCF Version 3, \$1,300 initial fee and \$300/mo.

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el 3082 Model X8 unit costs \$145,000, down from \$170,000, and a high-end 3082 Model X48 costs \$490,000, formerly \$540,000. The purchase price for the 3087 Model 1 constant distribution unit was also cut from \$50,000 to \$50,000, the spokeswoman said.

■ The prior for I/O channels was also cut from \$18,750 to \$16,250 each. Now, an eight-channel increment costs \$130,000. It used to cost \$150,000, the spokeswoman said.

Analysts viewed the pricing action as a clear indication that IBM is preparing to announce its so-called Sierra line of mainframes, said to be the successor to the 3080 line.

William Easterbrook, an IBM watcher with New York-based Kidder-Pearson & Co. Inc., noted that the last time IBM made such sweeping price cuts on a product line was back in 1961 when prices on the 3033 line were cut to make way for the 3080 series. In light of last week's pricing action, Easterbrook said he expected IBM to announce at least

System	3082-2	3082-4	3082-8	3082-16	3082-32	3082-64
Price	\$145,000	\$170,000	\$210,000	\$245,000	\$275,000	\$310,000
New Purchase Price	\$145,000	\$170,000	\$210,000	\$245,000	\$275,000	\$310,000

use, if not several, models of the Sierra line in late 1984 or early 1985.

Price cuts on the 3080 and 3080 appear to lend credence to speculation that IBM is planning to unveil a higher capacity disk drive to support the Sierra line of mainframes, noted James Porter, president of Disk Trend, Inc. in Los Altos, Calif.

Porter also noted that the three major models of IBM-compatible disk drives — Storage Technology Corp. (STC), Memorex Corp. and Control Data Corp. — all have managed in recent months to deliver significant quantities of 3390-compatible drives. This, Porter said, may have also influenced IBM's decision.

Easterbrook noted that there had been some speculation that the price cuts would be greater than 10%. Easterbrook noted that Memorex, CDC

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and STC combined have managed to ship roughly 33,000 3390-compatible units, enough to put a dent in IBM's profit expectations for the disk units.

Jerry Ungerman, vice-president and general manager for National Advanced Systems (NAS) of North America, Inc., said the cuts represent a typical IBM action when it plans to replace a product line. He added that NAS would make similar price reductions in its 3080-compatible systems.

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NEWS

Surcharge levied on leased line, local exchange net link

By Paul Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Private-line users whose circuits can access local exchange networks began paying extra for the privilege Aug. 26, when a \$30/line/mo surcharge became effective. The surcharge will cost users an estimated \$240 million per year.

The surcharge applies typically to a local private (special-access) line connecting a private branch exchange (PBX) to users in a distant city or to a special-access line connecting a PBX to a remote location within a single telephone company service area (Local Access and Transport Area).

Under changes ordered by the Federal Communications Commission:

■ Private-line customers who obtain exemptions from the surcharge within 60 days after Aug. 26 will not

have to pay it. Those who obtain exemptions after the 60-day interval will have to pay the surcharge, but will be eligible for a partial or total credit.

■ Local carriers will have to send each private-line customer a notice explaining how he can obtain a surcharge exemption.

■ An interexchange carrier can act as the agent for his customers in getting their private lines exempted.

Due to complaint

Owing to a complaint by the Ad Hoc Telecommunications Committee, a corporate communications users group, AT&T will not demand payment of the surcharge for 60 days after Aug. 26.

Bill Panolow, a staff manager in AT&T's interstate tariff implementation department, said AT&T plans to blanket-certify more than half of the

local special-access circuits supporting its private-line service. Blanket certification, he explained, consists of obtaining a surcharge exemption from local telephone companies for all local special-access circuits connected to a particular interstate private-line service. End users of such services would then be exempted from the surcharge automatically, he added.

If the local carriers go along with this plan, end users of Dataphone Digital Service and wideband data and Series 3000 analog data services would also be automatically exempted from the surcharge, Panolow maintained.

Customer exemptions

The remaining special-access circuits are connected mostly to Series 2000 and Accunet 71.5 services, he added. "Within the next two or three

weeks, we'll be sending instructions to those customers explaining how they can apply for exemptions." National account customers will also receive visits from AT&T sales personnel.

In most cases, a customer who cannot be exempted automatically from the surcharge will have to state that none of his special-access circuits is connected to a PBX or a similar device providing access to the local exchange network, Panolow said. The letter that AT&T is sending to each of these customers lists the individual circuits.

If any of the circuits provide access to the local exchange network, the surcharge will be imposed, he added. "As we understand the FCC's position, if the user isn't actually carrying local exchange traffic, but is connected to a PBX or similar device, the surcharge applies."

Commerce Department moves to ease computer export restrictions

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Department of Commerce last week indicated that it will unilaterally move to drop export restrictions on computers and electronic components that are already widely available in foreign countries, such as Japan.

The Commerce Department moves were signaled at a meeting of a private sector advisory group that counsels the department on export controls, which have risen sharply in recent months. The representatives of industry forcefully told the Commerce Department that U.S. firms are being hampered by export controls on technology that is already obtainable in countries such as Japan.

In recent months the Reagan administration has successfully persuaded its allies to tighten licensing of technology for export and has obtained allied agreement on revisions to the U.S. Commodities Control List. The revised list will reportedly loosen restrictions on some "lower end" technologies, such as 8-bit computers, but will substantially tighten controls over faster processing equipment.

The Reagan administration is trying to prevent the acquisition of technological advances in processors, chip manufacturing, telecommunications switching equipment and software by Eastern bloc countries.

Milton Baltas, director of technical programs in the Commerce Department's Office of Export Administration, told the representatives of the U.S.

computer industry last week that he "anticipates the logjam [holding up] of export license approvals to U.S. allies) breaking."

John Hybner, representing the office of general counsel at Commerce, told the private sector technical advisory group that the Commerce Department has determined there are no legal restrictions preventing Commerce from moving to decontrol, or remove from licensing requirements, technology found to be widely available in other foreign countries.

"If this is the case," commented E.B. Wilbur, chairman of the technical advisory group's subcommittee on foreign availability and representing IBM World Trade, "then I think we have some hope. It is then a policy problem and we know what we need to do."

Baltas said U.S. businesses that are being impacted by export license delays, due to the strict new regimen of review that includes the Department of Defense in some instances, must "build a case of specifics" regarding foreign availability and take it to Commerce Secretary Malcolm Baldrige.

Arnold Frutkin, chairman of the licensing subcommittee and representing Burroughs Corp., said that U.S. industry is concerned that its markets in other friendly Western countries, especially Japan, will be lost as a result of bureaucratic infighting over licensing of exports. "Japan is the issue, and the next decade is going to tell whether we will survive their challenges," Frutkin said.

Frutkin criticized the 11-month review process just completed by Commerce to assess the foreign availability and the technology of 8-bit computers. "This is technology that is old, not leading edge, and here you are still trying to control it," Frutkin noted.

Commerce Department officials excluded the general public from the open session while they presented their findings on 8-bit machines. It has been reported previously that ruggedized or militarized 8-bit machines and ones that have been engineered to prevent electromagnetic discharges will be restricted from exports by the allies.

Despite the statements of Commerce officials that they are prepared to decontrol technologies that are readily available in foreign countries, expressions of doubt were voiced by industry representatives. Dr. Roger Grosell, a former director of export control in the Department of Defense and now with Hewlett-Packard Co., said recent experience shows that where components are obtainable in foreign countries, the Defense Department has "moved to eliminate [their] availability with the help of the State Department."

John Boldock, director of the Office of Export Administration, said that a "fast-track" process for reviewing licenses will mean U.S. companies can expect replies in 10 to 20 days. However, the industry officials said that they are experiencing much greater delays when other agencies, such as the Department of Energy, are involved in the review.

GSA system seeks cheapest route

WASHINGTON, D.C. — The U.S. General Services Administration (GSA) recently implemented a data base access system to determine the cheapest way to transport government property from one city to another.

With the system, provided by Numerax, Inc., of Maywood, N.J., GSA employees use terminals to search through the Numerax data base of transportation tariffs that apply to government agencies and then select the most economical air or truck carrier for a particular route, according to Dan Carve, chief of transportation programs at GSA here. He said the government-only rates are generally 30% cheaper than those charged to

the private sector.

The Numerax terminals replace the slow process of searching through dozens of tariff books to find the government tariffs and thus have increased the productivity of the transportation staff, he said. "The more routing we can do, the more times we can save 30%," Carve said.

Numerax has installed 13 IBM 3101 terminals at government offices throughout the country. The terminals communicate with two interchangeable mainframes, an IBM 4341 and an IBM 370/158, that hold the Numerax data base, according to Frank Dellorosa, vice-president of product support services at Numerax.

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NEWS

'Topview' seen emerging as IBM standard

By Paul Rosenzweig
CW Staff

The seeds to a standard user interface available across IBM's entire product line were sown last month when IBM announced Topview, a window management system that runs on all IBM Personal Computers except the IBM PCjr and the IBM Personal Computer XT/870, according to analysts.

Topview's chief benefits are that it allows users to run several applications concurrently and to share data with incompatible applications. The operating environment, which is scheduled for release in the first quarter of 1985, supports either keyboard or mouse data entry.

"IBM has started pulling together the pieces to a consistent user interface," claimed Laura Stuart, senior analyst at Yankee Group, a Boston-based market research firm. "Topview is a key part of this strategy. Topview features, such as pop-up Help screens and windowing interfaces, are emerging on all IBM products and will be seen on numerous products, including IBM terminals."

When Topview was announced, Philip Estridge, president of IBM's Entry Systems Division, labeled the product as a foundation for future IBM applications and stated that IBM intended to expand Topview's capabilities to include IBM 3270 terminal emulation and support on the IBM PC Network.

Estridge Dyson, president of Endevore Holding, Inc. in New York, added, "There are a lot of steps between putting Topview on a 3101 [terminal] and on a Personal Computer. If one believes that the generic Personal Computer is the workstation of the future, then one can see that Topview will be the user interface of the future."

The first step in Topview's development is to convince microcomputer software developers to tailor programs so that they run under Topview, according to industry observers. "IBM is making it easy for developers to write for Topview," said Maureen Fleming, analyst at International Research Development, Inc., a Norwalk, Conn., market research firm. "Tailoring products to Topview is not as complicated as writing for [VisiCorp] Visi On or [Apple Computer, Inc.'s] Macintosh. The product should not be difficult to support."

IBM plans to offer, in the first quarter of 1985, a Tool-kit that will help vendors write Topview applications on an IBM Personal Computer.

Developers have to determine if they will sell enough

Topview versions of a program to justify allocating the staff and spending research and development dollars necessary to develop the new product. "The question becomes one of the larger installed base," Dyson noted.

"Topview's potential base is every IBM Personal Computer. The potential for other windowing applications is much smaller. IBM has more clout than these vendors."

The cost of development will vary for each vendor.

"We don't have to do very much to tailor our software so that it runs under Topview," claimed Mark Callagari, vice-president of software development at Innovative Software, Inc., an integrated program vendor located in Overland Park, Kan. "We wrote our programs in C so they could be easily ported, and we didn't cheat a lot in our design. We had included in our specifications Topview features, such as a mouse, I estimate that if we allocated two people, we could have a Topview version of our program ready in four months," Callagari said.

Dyson noted that other programs, such as Lotus Development Corp.'s 1-2-3 and Symphony, are written to take full advantage of the IBM Personal Computer's capabilities and will require more time and man power to tailor.

Most developers seem willing to gamble on Topview's success. "Topview will become the windowing standard that software companies will endorse," predicted Richard Rabins, president at Alpha Software, Inc. in Burlington, Mass. "IBM has promised to put more money and more effort behind Topview than any of its other software products."

The money and effort will be needed to overcome present shortcomings in the IBM product. "There are other windowing packages, like Quarterdeck Office Systems, Inc.'s Desq, that are slicker and more sophisticated than Topview," Stuart said. He added that IBM's PC-DOS operating system has limited multitasking capabilities, and the Personal Computer possesses weak graphics features. When used in 528K bytes of random access memory, Topview leaves only 80K bytes available for the application program.

These limitations caused one vendor, Multimate International Corp. in East Hartford, Conn., to balk at endorsing Topview. "Topview does not have sufficient graphics capability to support a full-function word processing system," said Will Jones, chairman of Multimate. "So, we have yet to decide which windowing environment we will write to."

IBM moves in, squeeze follows?

What will IBM's entry into the windowing arena mean to other vendors such as Microsoft Corp., Digital Research, Inc., Quarterdeck Office Systems, Inc. and VisiCorp?

"Thumbs down on [Microsoft] Windows and offerings from Digital Research," said Richard Rabins, president of software vendor Alpha Software Co. in Burlington, Mass. "Topview spells bad news for these and other competing windowing systems."

Mark Callagari, vice-president of software development at Innovative Software, Inc., an integrated package vendor in Overland Park, Kan., maintained, "We put our development of Windows and [Digital Research] Concurrent PC-DOS on the back burner and are concentrating on Topview and [Microsoft] Xenix."

Maureen Fleming, analyst at International Research Development, Inc., a Norwalk, Conn., market research firm, disagreed. "IBM's entry will not prevent Windows from being successful. Windows offers compatibility on various microcomputers, while Topview is offered only on IBM products."

Fleming predicted that all-in-one integrated packages are threatened, rather than windowing products.

"Since one can run different applications under Topview, there is little incentive to use integrated packages that sacrifice the functionality of stand-alone applications," the analyst noted.

Try, try again . . . Space shuttle gets off ground without a hitch

Cape Canaveral, Fla. — The maiden launch of the space shuttle *Discovery* happened without a hitch last week — on its second try. The flight had been moved forward to Aug. 30 from the day before after a software malfunction was discovered in one of its computers.

The malfunction, in a unit called the Master Events Controller (MEC), made for a 300 microsecond difference in the timing of the shuttle's release of its solid-fuel booster rockets.

The rockets are released roughly two minutes after launch, when the MEC fires the exploding bolts that attach the rockets to either side of the shuttle's main launch rocket.

A test prior to the Aug. 29 countdown found the timing difference, which was traced to a problem with the IBM software running in Rockwell International Corp.'s MEC. National Aeronautics and Space Administration spokesman Dick Young reported. The problem was fixed using

ing a "software patch inserted in the MEC to work around that [problem]," he said.

Asked why a 300 microsecond difference in the release sequence could postpone the mission, a second NASA spokesman at the Johnson Space Center in Houston said, "We don't like sending anything up without it being 100%." The six-day shuttle mission carries three communications satellites and several on-board experiments.

The timing difference was not the first glitch to have hit the *Discovery* mission, nor the first caused by a computer. *Discovery's* first planned launch June 26 was called off because of a memory page error in one of its five on-board IBM General Purpose Computers; that caused navigation and fly the craft during take-off and landing. The launch date was moved forward a day, then postponed until last week after a fuel valve malfunctioned.

Training, certification program established for computer crime law enforcement sleuths

WASHINGTON, D.C. — The International Association of Computer Crime Investigators, a non-profit corporation, is establishing a training and certification program for DP crime investigators. Bruce Goldstein, the group's executive director, said last week.

He said the program, open to private and law-enforcement investigators, will provide three levels of training culminating in a qualifying examination for certification. The training includes the study of DP operations and vulnerability, legal issues and avenues of prosecution, crime detection and investigation, case histories and hands-on investigations using computers.

Goldstein said the association has received several donations of microcomputer software for use in the training program and is now seeking hardware donations so that students will have hands-on investigating experience in the classroom. This part of the program will require investigations of computer crimes that have actually occurred and are simulated on the microcomputer, he said.

The first series of training workshops will be held Sept. 25-28 at the Arlington, Va., Quality Inn, Goldstein said.

The program fee is \$425. Registration information is available from Goldstein at Room 708, 9600 Royal Lane, Dallas, Texas 75243.


CORRECTIONS

American Express Co., not Shearson Lehman/American Express, Inc., is using microcomputers to get information from its mainframe [CW, Aug. 20].

Kollnir Corp. is the vendor for Kprobe [CW, Aug. 13], a system tool that eliminates paper dumps and reduces debugging time for mainframes running IBM's VM/CMS operating system.

Intelligence Software's link works with IBM's FPS and ADRES, not with products from Execucom System Corp. or Applied Data Research, Inc., as was reported [CW, July 23, 1984].

A product announcement in the Aug. 13 Systems & Peripherals section of *Computerworld* incorrectly stated the software environment for a modular color graphics system by Symbolics, Inc. The unit was designed to use Symbolics software, the vendor said.



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NEWS

Users say DG shedding reputation for poor service

By Jeffrey Benker
San Jose, Calif. Bureau

SNOW DIBROO — Mort Kahl still vividly remembers some of his early, painful experiences with Data General Corp.'s service personnel.

"A few years ago, when I'd call up DG to report a problem in my system, they'd say, 'Sure, we can help you. We'll get right back to you,'" he recalled. "But they never did."

Brad Friedlander, an information systems consultant with Arthur D. Little, Inc., told similar horror stories last week during the annual meeting of the North American Data General Users Group (Nadgus). "DG's service often used to be terrible," he said. "In some cases, in fact, the users were more knowledgeable about DG's products than DG's own field engineers."

Since then, however, the quality of the company's customer service has improved "amazingly," according to Kahl, who directs MIS operations for Norwalk, Conn.-based E.T. Vanderbilt Co.

Kahl's assessment is shared by Calvin Durden, comptroller for Trac-

tor & Equipment Co., headquartered in Birmingham, Ala. "Today, when we call up DG and ask for help in correcting a problem, we expect a field engineer to arrive on our site within two hours," Durden said.

Nonfound professional

Both Kahl and Durden view the increased responsiveness of DG's field service organization as solid evidence of the firm's newfound corporate maturity and professionalism.

"DG is at or near the end of a major phase in its evolution," Kahl said. "Up until about six years ago, the only thing the firm provided its customers was hardware. Now, DG is making the transition from a hot-shot vendor that used to sell Novas like peanuts to a full service company."

Another purported sign of the vendor's emerging maturation is its increased interest in acquiring and reselling other firms' hardware and software. "For a long time," Durden recalled, "DG suffered from the not-invented-here syndrome. If they didn't make something themselves,

they wouldn't sell it. But about five years ago, that attitude began to change."

Durden cited his own company's recent sales of a case in point. In the late 1970s, Tractor & Equipment became the first user of the Westboro, Mass.-based vendor's Business Basic, which originated in Atlanta with Technical Analysis Corp., which was later acquired by DG, he said.

As part of its steady metamorphosis into a full service vendor, DG has also reportedly shown an increased willingness to listen to and try to solve user problems, users said. Although DG, like most other vendors, is probably especially attentive to the needs of its very largest accounts, the company "pays close attention to even small accounts' opinions," said small customers too, which I think is significant," Friedlander said.

At times, however, DG's attentiveness to its users still waxes. "Sometimes I get the feeling they've got 4½ tons of wax in their ears and their fingers are paralyzed," said Kahl, who currently serves as Nadgus president. "But the reason I occasion-

ally have a hard time convincing them to listen to me is that some of my problems are important only to me, not to any other users."

Essentially servile

The minicomputer supplier also still reportedly suffers from a penchant for excessive secretiveness and unpleasantness. "They constantly question your motives," Kahl complained. "When you ask them a question or seek their help in solving a problem, they often act as if they suspect you're a spy for the competition."

On the other hand, DG's deep-seated distrustfulness is already beginning to moderate. "They're certainly much more open today than they were a few years ago," Friedlander said.

"Of course, they still have a lot of room for improvement, and they're not yet as helpful in working with users as some of their competitors. But when you look at where DG started, the improvement in the company's attitude [toward fielding user inquiries] is really astounding," he said.

RECRUIT from page 1

cluding Dfens, are way up compared with last year. The Wall Street Journal said recruitment rates for DP positions are about comparable to last year, while the San Jose (Calif.) Mercury-News reported a decline in such listings. Recruitment listings are up markedly in *Computerworld*.

Herb Greene, manager of Fox Morris Associates, Inc.'s data processing placement division, said MIS hiring began to quicken about a year ago, and since then there has been a "very steady pickup." Fox Morris is a Philadelphia-based executive search firm.

Greene said the seven MIS positions he is presently working to fill — paying in the \$50,000 to \$80,000 range — are the most assignments he recalls ever having at one time.

Exponential rate of growth

Fidelity Systems Co., a subsidiary of Boston-based Fidelity Investment, Inc., which provides DP support to the financial services company's other units, has doubled the size of its data processing staff in the last three years, according to President Michael Simmons. He said the requirements for information processing are increasing at an almost exponential rate, fueled in part by the rapid spread of personal computers in offices.

Most of those interviewed attributed the growth in hiring to business expansion brought on by a healthier U.S. economy. "Business has been expanding, so the need for MIS has been expanding," said Mike Shamban, president of Boston-based Allied Advertising Agency, Inc., which han-

dles a large number of high-technology accounts.

Jaye Squire, director of sales for Business People, Inc., a Minneapolis company that sponsors job fairs for Fortune 1,000 firms seeking technical professionals, said hiring is not expanding as much as it is rebounding.

Repercussions from recession

"What we're seeing in 1984 is not an increase based on need, but rather continued repercussions from the 1982 recession," said Squire, who formerly specialized in recruiting of MIS professionals.

As a result of corporate cost cutting during the recession, she explained, many MIS departments were scaled down and many MIS managers sent packing.

"These positions were held open from six to 18 months, reorganized and reevaluated," Squire said. "During this past year, we've been seeing [many of these positions filled]," she said.

"A year ago we were at the bottom. There was nothing going on," said Phil Sullivan, director of Source EDP Personnel Services, Inc., a professional recruiting firm.

"There is an increase, there is some movement," Sullivan said. "Some people who were afraid to move a year ago are now looking to move. Some companies that were holding back on plans a year ago are now moving ahead with them."

Although hard statistics were difficult to come by, observers said the hiring appears to be taking place in most business sectors, including insurance, banking and finance and manufacturing.

Financial institutions have been doing some

strong recruiting, according to Greene, who attributed this to the effects of deregulation. In an increased effort to compete with large financial centers, many regional commercial banks have moved away from using an outside vendor and created their own data processing centers, he said.

Two years ago, Texas American Bank in Fort Worth, Texas, established Texas American Bank Services, a data processing and bank operation subsidiary. "I got the job as vice president and director of personnel, the company has been hiring ever since. For the past 18 months, we've been vigorously hiring people at all levels," he said.

Management attributes important

But some people cautioned that the job prospects are not as rosy for MIS managers possessing what they described as average skills. Technical knowledge is still important, they said, but employers are increasingly mentioning such management attributes as creativity, decision-making and communication skills.

"Good MIS people at the upper level have been hard to find all along," Shamban said.

Only recently has the DP executive been perceived as a businessman, "Fox & Morris' Greene commented. Top management is looking for the person who "understands business, but has arrived there via data processing."

Added Squire, "Corporations are interested in cost efficiency. They want sharp individuals who are well-rounded, who understand all the components of the corporation and who are able to make decisions on that basis."

SUNDAY from page 1

blue law concept. [It's] very simple-minded about it," Wilson said.

The lack of Sunday operation time requires him to schedule maintenance closely around processing operations. "We find it difficult at times," he said. In 18 months, the company will be moving its 600 employees to Franklin Lakes, N.J., where no such ban is in effect.

The 86-year Paramus police force is trained to watch for violators of the blue law. People found working in their offices are advised to go home, and those who do not are summoned before the Paramus municipal court.

Blue law violations are punishable

with a fine of up to \$600 or a jail sentence of up to 90 days or both.

Richard A. Kurland, a Paramus lawyer, has been summoned to court twice since January for writing briefs in his office on Sunday. Each time, the case has been dismissed without resolving the worldly employment issue.

An employee of the IBM Product Center on Rt. 179 was convicted and fined \$25 for violating the law by working on her master's degree at the center on Sunday, Kurland said. "Ninety percent of the people of Paramus support the blue law," said Mayor Joseph Cipolla, who is unapologetic about their impact on computer operations.

Other boroughs with blue laws in

New Jersey ban retail sales, but don't have the worldly employment or computer prohibition. Paramus enacted it in 1967 because it wanted a one-day-a-week respite from traffic, Cipolla said.

Located just eight miles from one of the major bridges into Manhattan, Paramus is also a regional shopping site. Three malls are located next to the state and interstate routes that crisscross the town.

"You know who wants you to work on Sunday? The big bosses. The big boss is out on the golf course or out yachting, but he wants you to be at work," Cipolla said. He has fought off two challenges to the blue law during his nine years in office and says he encourages strict enforce-

ment of all their provisions.

The laws allow the sale of food, medical supplies, real estate and recreational goods.

"I can't say a shogun on Sunday but not clothes," said John Anthony, programming manager at Bergen Community College here. The school's computer center is closed Sundays, he said.

"A lot of maintenance is done after hours. In a large shop running 24 hours a day, Sunday is a prime day to do the maintenance and cleanup," said Austin Weber, senior editor of "Computerfile," the newsletter of the Data Processing Management Association in Park Ridge, Ill. The association is a professional society of data processing managers.

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NEWS

AT&T Technologies to slash work force by 11,000

Marketing group hardest hit; analysts see room for more cuts

By Peter Bartelsh

CN Staff

NEW YORK — AT&T Technologies, Inc., the deregulated business segment of AT&T, moved recently to cut its work force by more than 11,000 positions, a move seen by analysts as one small step in the right direction.

James E. Olson, vice-chairman of AT&T and chairman of AT&T Technologies, announced the planned employment cutback from present staffing of 266,000 in an address telephoned across the country to employees on Aug. 27. Olson emphasized that the cuts were to apply to

positions, implying that normal attrition would ease the need for layoffs.

Hardest hit of the divisions comprising AT&T Technologies was AT&T Information Systems, the marketing and service segment. That division, staffed by about 128,000 at the beginning of this year, was told it will be cut by 6,000 positions.

The other announced cutbacks were: AT&T Consumer Products, 3,000; AT&T Network Systems, 2,000; staff organizations, 1,600; and AT&T Bell Laboratories, 150 administrative positions.

Apparently untouched in the reorganization were the three groups

comprising AT&T Technology Systems, a division of AT&T Technologies. These three groups are the primary focus of AT&T's computer development efforts and include Computer Systems, Federal Systems and Components & Electronic Systems.

Telecommunications industry analyst Kenneth M. Bosomworth, president of International Resource Development, Inc., said he thought the cuts represented a good business decision by AT&T Technologies and will mainly impact maintenance and repair employees.

Bosomworth said there is further

room for cutbacks at AT&T, however. "I think everybody agrees there is fat at the top of AT&T Technologies, and there is fat at the bottom, too," he said.

Monopoly-oriented

Charles Robbins, an analyst with International Data Corp., noted that AT&T companies had grown in a monopolistic environment without the need for strict management and financial controls. "AT&T is showing it is willing to pull its belt in and be a little more selective; it wants to be competitive three years from now," he said.

A Computerworld analysis of employment-to-revenue ratios in the computer industry indicates a relatively low revenues-per-employee ratio at AT&T Technologies. The analysis was based on revenues for the first six months of this year projected forward for the remaining six months and assuming that half of AT&T's revenues were derived from AT&T Technologies, as forecast last year by AT&T.

With \$16.7 billion in revenues for this year, AT&T Technologies would have a revenues-per-employee ratio of \$66,749 at current employment and \$66,719 after the job cuts, just marginally above the fiscal year 1983 ratios at much smaller mini-computer companies, such as Digital Equipment Corp. (\$58,519), but about 40% below the ratio at IBM in 1983 (\$108,564). If AT&T Technologies had achieved projections of \$24 billion in revenues this year, the ratio would have been \$94,117, about 10% below IBM's 1983 ratio.

Comparisons between the effectiveness of AT&T's structures and those of established computer industry vendors is difficult because of AT&T's decision not to distinguish revenues from its regulated business, AT&T Communications and its non-regulated business.

Revenue figures

For the first six months following divestiture, AT&T reported revenues of \$16.7 billion; analysts believe, and AT&T forecast last year, that more than half of those revenues were derived from AT&T Technologies, formerly AT&T Long Lines, which employs about 118,000 people — less than half the work force of AT&T Technologies. Robbins said he believes as much as 70% of AT&T revenues so far this year were derived from AT&T Technologies.

During the year-long divestiture process that culminated in the Jan. 1 formation of AT&T Technologies, the major doubt among analysts about the company's ability to compete in the fast-paced, high-technology manufacturing arena has been the ability of the management structure to adapt from a protected monopoly environment to a competitive environment that increasingly relies on entrepreneurial skills.

AT&T's companies are also highly unionized in an industry that prides itself on its low level of unionization; the Communications Workers of America, the major AT&T union, has already criticized the announced cutbacks, charging that AT&T should first cut from the top.

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NEWS

Info Center/1 bundles functions into integrated tool

IBM product allows access to SQL/DS and upcoming DB 2 DBMS

By Paul Miller
CWI Staff

WHITE PLAINS, N.Y. — In a move aimed at tying together its scattered offerings in the area of information center software, IBM has announced a set of integrated data extraction and manipulation functions that provides access to the company's SQL/DS and soon-to-be-released DB 2 data base management systems (DBMS).

Called Info Center/1, the product is basically an amalgamation and enhancement of three existing IBM offerings: A Departmental Reporting System II, including the Business Graphics Feature (ADRS/BO); APL Data Interface II (APL/DI II); and Financial Planning System II (FPS II).

Current users of the predecessor products can continue to operate using existing commands, or they can access them through the interface provided with Info Center/1, IBM said.

In addition to incorporating most features of those products, Info Center/1 employs full screen support, with more than 90 panels and 300 help screens for data inquiry and analysis, spreadsheets, report formatting, data entry and validation, business and financial planning functions, graphics, data base access and enhanced printer support.

Release 1.0, which runs in IBM's VM operating environment, will be

'Under the old system, APL showed through all the time, especially in error messages. In [Info Center/1] you should never have to learn APL except in debug mode.' — Douglas Taylor, development manager, IBM programming services

available Sept. 28. Release 1.1 will be available in the first quarter of 1985. It adds support for IBM's MVS and MVS/3A under IBM's TSO as well as for SQL/DS and DB 2. It will reportedly support any major file system that IBM supports except its IMS DBMS.

Douglas Taylor, development manager in IBM programming services in Dallas, said Info Center/1 will be fully supported by IBM. He noted that the three packages it replaces "were never really mainline IBM products."

Taylor said Info Center/1 has also eliminated any need to know APL. "Under the old system, APL showed through all the time, especially in error messages," he said. "In [Info Center/1] you should never have to learn APL except in debug mode."

The full screen interface includes dynamic scrolling, windowing, user profiles, screen layouts, prompts and level-sensitive help screens.

The query system allows users to access, analyze, manipulate and report on various file types, including inverted files, SQL/DS and DB 2 files, application files and transfer files, Taylor said.

More than 50 query functions are available. Selection can be handled using "and/or" and Boolean logic. Data can also be summarized and analyzed in a variety of ways.

Report writer features include all of the functions currently available in ADRS II and additional enhancements, including GOTO logic; column name display windows; "nickname" files for printer control; optional automatic checkpointing; 60 financial planning functions; lists of objects; external transfer files; and a UNIQUE command that allows listing of unique entries in one or more columns.

Info Center/1 Data Entry/Data Validation (DE/DV) is a facility that allows data entry and display panels

to be tailored. Facilities are provided for defining multiple input screens iteratively and entering data into predefined screens, IBM said. Validation techniques include range checking, limit checking, table matching, mask comparisons and column relationships. Validation can be performed by entry or turned off and run on demand.

Business planning features

Business planning features provide a set of modeling routines that work with the reporting systems and address periodic data. All of the features of FPS have been included, as well as 10 additional capabilities that conform to new tax laws. Those features include: annual accelerated cost recovery and carryback or carryforward of income tax losses. Other functions include composite cost of capital, deflated sum, expected values of annual net cash and net present value. Business graphics include eight types of charts.

Info Center/1 requires IBM Application Prototype Environment and Graphics Data Display Manager.

The lease price is \$1,200/mo. Purchase price is \$32,500.

Information is available from IBM's National Accounts Division, which is located at 1185 Whitehouse Ave., White Plains, N.Y. 10604.

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NEWS

Consultant: Put more budget control in users' hands



COMPUTER CENTER
CONFERENCE
& EXPOSITION

By Paul Hille
CW Staff

BOSTON — Just because your information center is popular does not mean it has to cost an arm and a leg. If your budget is spiraling out of sight, the solution may be simply to pass as much control as possible to the users.

That was the message of William Inmon, director of national office and technology services at Coopers & Lybrand in Denver in a presentation at the premiere Information Center Conference & Exposition held here last week.

Inmon argued that information center and on-line operational processing should be physically and functionally separate in an organization. Chargeback should be effectively employed by DP to make users better aware of what the information center is costing the company.

End-user processing should also be

If users are not aware of the high costs of computing, they will do nothing to reduce them.

moved increasingly to micros, Inmon said, thereby putting more budget responsibility in the hands of the users and freeing up the mainframe for high-transaction processing.

The consultant and author scolded organizations that have allowed information center budgets to become a "bottomless pit." If users are not aware of the high costs of computing, they will do nothing to reduce them, he warned. Companies that continue to provide free information center services will someday have to make the difficult choice between restricting those services or watching their budgets go out of sight.

Inmon said that, contrary to popular belief, information center budgets are rising due to hardware, rather than software costs. Even though the unit cost of hardware is falling rapidly, he said, hardware expenses are actually rising as a percentage of total data processing budgets. This is largely due to dramatic increases in information-center-type use.

Inmon said there is no reason why information center and on-line operational computing should be intertwined. The on-line operational environment involves detailed data, transaction processing with fast response times, large volumes of data and optimized program execution. In contrast, the information center environment is flexible, uses smaller amounts of data, often at the summary level, is oriented toward "what-if" processing and does not generally up production data.

"You'd be amazed at how many people mix [Cullinet Software, Inc.'s] DMS and [Information Builders, Inc.'s] Focus on the same machine," Inmon said.

Because the needs of the two functions are so different, most companies only need a mechanism to pass data back and forth between the environments. This can even be a manual method, he said.

In addition, users should be moving information-center-type processing to microcomputers as much as possible, he said. "A lot of fourth-generation vendors now have good facilities for offloading the software to micros," he said, "and you can buy a lot of micros for the price of a mainframe."

Inmon repeatedly warned DP departments against maintaining vital production data in an information center. "The foundation [of the ma-

ture information center environment] is that we have to have a single system of record, and that's in the operational environment," he said.

This arrangement not only prevents the confusion caused by having to maintain different versions of the same data, but gives the DP department ultimate control of maintenance and distribution of the corporate data base.

Making the users responsible for their own information center costs will also enable the end-user environment to mature more rapidly, he said. Once users become aware of how much duplication of effort exists in an atmosphere of poor communication, they will move to create a more

integrated and cooperative environment around the operational systems that are still controlled by DP.

Companies that have already moved to make users responsible for their own costs have little to worry about, Inmon said. "If you asked for 10 things you can do to achieve [this environment], I'd say the first nine are to sit back and relax," he said.

But he added that DP can take some steps to prepare for the coming changes. The first is to map out the information systems architecture by beginning to recognize the commonality of data and how it can be used by different functions. Another is to gain management support and understanding for the new philosophy.

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NEWS

Attendees foresee increased role for information center



CW at INFO-CENTER
CONFERENCE
& EXPOSITION

By Paul Miller
CW Staff

BOSTON — The information center concept is undergoing a major transformation that may soon make it the largest segment of a company's data processing operations. The result could be a new MIS environment in which data processing handles all operational computing while the information center shoulders the responsibility for all operations performed by end users.

These are among the conclusions reached from interviews with users and consultants at the Information Center Conference & Exposition held here last week.

Most attendees agreed that the information center concept has changed substantially since it was first introduced four years ago. Whereas most centers initially offered a few mainframe-based tools for application development, many now coordinate such formerly separate functions as office automation, decision support and microcomputer support.

Transition causing problems

However, this transition is also causing some problems. Attendees indicated that, in many cases, other departments resent the perceived intrusion of the information center upon their turf. Several users cited as a prime concern the need to minimize this conflict. (See accompanying story below.)

William Immon, director of the national office of technology services at Coopers & Lybrand in Denver, said that conflict between DP and information centers is inevitable, but what will emerge will be "much better" than what has existed in the past, he predicted.

"Clear definitions are going to emerge between what DP does and what end users do," he said. "In five years, DP will do almost strictly operations, and the information center will do all user computing."

Immon observed that information centers are maturing due to both the recession and to excesses that have occurred in the past. Many companies have moved away from the syndrome of adding a mainframe every six months to accommodate applications written by end users.

"The driving force [in the information center] is going to be toward cost justification, getting return on investment and using chargeback realistically," he said.

The Bank of America in San Francisco last year consolidated its office automation, personal computing and time-sharing groups into the end-user computing department. The department serves as the first line of reference for users who need applications, even if the requests ultimately go to MIS, said Coby L. Dunn, vice-president of end-user computing at the Bank of America.

"Eighteen months ago, if you were a user and you had what you perceived as an office automation problem, you called OA," he said. "Then if you wanted to get into production planning, you had to call another department and still another if you wanted to add a spreadsheet."

Under the new structure, "The end-user com-

puting department's function in life is to handle end-user requests," Dunn said. "Our goal is to have a support organization that can point you in the right direction."

Blue Cross/Blue Shield of Illinois also folded OA and microcomputer support into a newly created information center last year, according to Sharon L. Porter, product manager in the information center. Two of the three employees in OA subsequently left the department, she said. The center now handles training, consulting, support, purchasing and installation of all micro and OA equipment and administers a full set of mainframe-based information center tools.

Emphasizing flexibility

Porter noted that the department is preparing to accommodate future expansion of end-user computing by "trying not to make our policies too black and white. We're trying to keep them flexible," she said.

She estimated that the information center at Blue Cross/Blue Shield has nearly doubled in size since it was introduced last year.

Katherine J. Finley, who is also a product manager in the Illinois Blue Cross/Blue Shield information center, said that the center has engendered some ill feelings from data processing. "They may have a huge application they've been working on for years and then they run out of money," she said. "We can often get some kind of user system running in a couple of weeks." Porter agreed that contention between the two organizations is a matter of concern, but acknowledged that "everyone's trying to look the other way right now."

Info center setup no easy task



CW at INFO-CENTER
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which tools are actually useful, he said.

"They're getting into a 'new car' mind-set," Elder said. Users are so excited about the available new technologies that they "are spending more time learning DP-type things and less doing their functional jobs," he said.

As a result, corporate management sees expensive new hardware coming in the door without proven benefits. Managing the acquisition of new technologies will be one of the information center's biggest challenges, he said.

Elder said another major challenge will be to reach a peaceful coexistence with data processing. "It's going to take a really good manager, because there are so many egos involved," he said.

Another user who is in the process of implementing an information center said the major roadblock is acceptance by users, many of whom fear that their operational data will be controlled too tightly. "Functional people want to think of data as being their own," said James Hannon, director of MIS at the U.S. Army's Tobyhanna Army Depot in Tobyhanna, Pa. "Their concern is over how much will be available [after the information center is established]," he maintained.

Hannon said the MIS department is trying to remove the questions by encouraging the use of microcomputers and by establishing Unit operating system compatibility and local area network standards.

"We're trying to prove to them that they can work with a larger body of shared data and use it stand-alone," he said.

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NEWS

Info centers seen using conventional teaching methods



ON AT INFO CENTER CONFERENCE & EXPOSITION

By John Deans
Chief

BOSTON—Most information center managers and related professionals are using traditional classroom instruction techniques — not computer-based methods — to train end users in the use of their organization's computer system, a consensus of interviews at last week's Information Center Conference & Exposition have revealed.

"Training is a very important part of what we do," said William Dellos, information center manager at Chrysler Corp. in Detroit. Chrysler's two-year-old information center runs 10 training sessions each month in the traditional classroom instruction method, he said, and a second facility is scheduled to be opened soon.

The classroom in use now has seven workstations tied into the company's computer system. Class size is limited to 14 students. In addition to its own training, the company offers microcomputer training by IBM, Texas Instruments, Inc. and Xerox Corp. representatives.

Chrysler's computer system reaches 650 end users, and the information center's newsletter at the company circulates to 1,100 people, DeLores said. Chrysler's IBM 4581-based shop features 3,000 IBM 3270 terminals. The company also operates a time-sharing system based on Burroughs Corp. 7800s, but that system is scheduled to be phased out by 1986, he said.

"With the information center, we are trying to reach more end users and get the professionals into more sophisticated projects," DeLores said. Ted Landberg, a computer scientist with the National Bureau of Standards in Washington, D.C., said that women make the best end-user trainers. The bureau recently installed its information center, oriented toward supporting microcomputer users.

"Not to be sexist about it, but women are better trainers because men are more comfortable with them," he said, adding that he bases his view on experience and comments from end users. Besides being female, "the best trainers are those with a background in the humanities or in teaching. You need to be patient and have a good deal of empathy with students," he said.

The bureau's DP shop features Digital Equipment Corp. VAX PDP-11/70s and 750s, as well as IBM mainframes, Landberg said. A local area network ties the systems together.

Training at the bureau consists of demonstrations and initial orientations, as well as training offered by outside firms, he said. "There is no computer-based training, but we're working on that," Landberg added.

Barbara Knight of the Farm Credit Bank of Springfield, Mass., which has a one-year-old information center, said training is "extremely vital." She sees two types of training as required: general education and technical training.

"General education is critical for more effective communication be-

tween DP and end users," she said. Her company trains professionals and support personnel in both in classrooms. The bank's system is based on DEC minicomputers, and it serves 260 users.

Larry Newgaard, project manager for Borden, Inc. in Columbus, Ohio, said the DP shop needs an infinite amount of help in answering requests for information from end users. "Somehow, you have to get the knowledge of how to use the equipment in the users' or customers' hands," he said. "The key to that is to provide training and support."

DeLores

Borden conducts classroom training in each of its four regional U.S. centers, Newgaard said.

David H. Sitter, a senior computer analyst in the Pinellas County DP office in Clearwater, Fla., which is just starting an information center, said selected members of his staff are being trained at St. Petersburg Jr. College to become trainers. The trainers are primarily from the systems and programming divisions, although one trainer has a word processing background.

Cyndi Smith, the MIS product support coordinator at Morton Thokol,

Inc. in Danvers, Mass., said training is "extremely important" in her company's information center. The company runs an IBM System/38 and a DBC PDP-11, as well as IBM Personal Computers.

The company takes the approach of small classroom, one-to-one training, with a maximum class size of four people. Also, instruction is limited to four hours a day.

Morton Thokol is attempting to extend the system to marketing managers, sales staff and secretaries, Smith said. His trainers primarily have communications or technical backgrounds, she said, and they are "people who know what it's like to learn something for the first time."

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NEWS



BOB METCALFE-

Bob Metcalfe is chairman of the board of 3Com Corp., but he is perhaps better known as the father of Ethernet. Metcalfe invented this local-area network on May 22, 1973, while working on a project at Xerox Corp. After leaving Xerox in 1979, he acted as the marriage broker in the deal that brought Digital Equipment Corp., Intel Corp. and Xerox together to back Ethernet as an industry standard.

Metcalfe formed 3Com in June 1979 to capitalize on the new Ethernet specification that this month published in September 1980. The company went public in March and recently reported first-year revenues of \$16 million. Metcalfe has since handed the reins to 3Com over to its new president, Bill Krause, former general manager of Hewlett-Packard Co.'s general systems division, admitting that, "Bill knows how to run companies, and I don't." Metcalfe now heads up a new 3Com business unit.

Senior Editor John Dier covered Metcalfe at the 1984 National Computer Conference in Las Vegas to ask him about developments in the local network industry. Metcalfe received a B.S. in electrical engineering and a B.S. in management from MIT in 1969, an M.S. in applied mathematics from Harvard University in 1970 and a Ph.D. in computer sciences from Harvard in 1973.

Q What's the driving force behind local networks?

The driving force behind local networks is the continued proliferation of personal computers. The higher the density of personal computers, the more important they are as a cost item, so you have to get them to be cheaper, and one of the things local nets do is get the cost of personal computers down by having shared peripherals. Two personal computers that are relatively close can share a printer, whereas two that are in separate cities can't.

Q Can you give us your view of how local networks will evolve in the Fortune 500?

There is a lot of evidence that the bottom-up proliferation of personal computers and networks is generating much more activity within the Fortune 500 than the top-down. The top-down has very long sales cycles and is generally hinging up in what IBM's plans are. But while all that is going on, individual department managers or group managers that don't need to have a corporate plan are buying products.

Over time, the MIS manager will reassert his control. As these little networks get larger and larger and begin to overlap, they will need to be connected, and as the information in them be-

comes more and more corporatewide, there will be a growing need to hook them into the mainframe. So the mainframe connection is important. This is a gradual process, a process measured in years.

Q How will these small networks be interconnected in the future?

I think it is safe and accurate to say that almost all technologies will be represented. The general hierarchical model that has evolved, at least in my mind, has networks like Ethernet for short-haul, high-bandwidth connections; CATV systems for lower bandwidth, but much greater distance connections; and private branch exchanges (PBX) supporting the slowest speed traffic, but at the greatest distances.

Q Are there technological hurdles to overcome in the integration of these technologies?

No. The ability to tie all that together has been demonstrated by various ad hoc solutions. But the important and difficult work is to provide this in a way that permits multivendor connections. Any one vendor can write a packet switch that can move data between the PBX and a broadband or baseband network — the trick is to do it in such a way that you're following a multivendor standard. That's going to take time.

Q Do standards jeopardize the individuality of vendors' products?

Standards only cause problems for companies with dominant market share, because they rely on a lack of standards to lock their customers in. To companies that don't have dominant market share, standards allow them to compete in a market.

It is my premise that the principal obstacle, the pacing item in the proliferation of computing in general, is incompatibility. By developing compatibility, the whole market grows rapidly enough so that even the companies with dominant market get the benefit of it.

Q How does IBM fit into the picture?

IBM has many local network products. For reasons that I don't fully understand, it doesn't call them local networks. [IBM introduced its PC Network Aug. 14, after this interview took place.] For example, the [3270 Personal Computer] is a 2M bit/sec baseband coaxial, star-shaped network for the IBM Personal Computer that connects to mainframes. You hook your Personal Computer into a 3274 cluster controller with a piece of coax, and it connects you to the mainframe and to other Personal Computers at 2M bit/sec. It's a local network. The cluster adapter for [IBM's] PC is another example of one of its local networks; it happens to be slow and at the mo-

ment doesn't have much software, but that is a local network that IBM sells.

My theory is that the [3270-PC] will make the most money and be IBM's most productive local network. In the future, IBM will introduce four or five other local networks that won't be called local nets. Apparently, the only one they are going to call a local network is the token network out of Raleigh, N.C.

Q How about AT&T?

AT&T seems to be new to this business, but they have introduced the 3B Net, which is Ethernet, IEEE-802-compatible and uses 3Com transceivers. As someone else said of AT&T's recently announced Information Systems Network, it's exactly what you would expect to come from a PBX manufacturer.

I think AT&T will announce a lot of local networks; it's a huge company, so there is room for it to have more than one product. I think it was good that they announced an Ethernet-compatible network, even though it hasn't made much of this. I have a feeling the people in Illinois [from AT&T Technologies] are gung ho about the Ethernet-type product, but the people in New Jersey [at AT&T Information Systems, Inc.] aren't. From the marketing point of view, Information Systems has the most clout.

Q Will chip technology bring the price of network connections down?

Prices are coming down pretty significantly. But we are now getting to the level where it's hard to predict where the bottoming out will be. The question of how much network connections will actually cost depends on the cost of chips, the volume of production and the advent of significant competition, all of which are happening.

We recently added a gate-array chip to our board that reduced the number of chips on our card by 40. Subsequent boards will have additional Ethernet-specific integrated circuits that will reduce the overall chip count, and then ultimately those chips will begin to get consolidated. Once you get into the board level, the incentives for going from three chips to one are not nearly as strong as the incentives to get onto one board. I don't think you'll see the rush to get onto one chip in the next year or two, but you might in three or four years.

Q Will the higher level standard network protocols, such as the International Standards Organization's protocols demonstrated at NCC, be integrated into chips?

For some time, levels three and up will be in software, but eventually we can expect to see up to level four, the transport layer, implemented in

See METCALFE page 17

NEWS

Weathermen use common sense to back up automation

By Wayne McManey

How computers really helped local meteorologists increase the accuracy of their weather forecasts?

Frederick Sanders does not seem to think so, and his publicized opinion has garnered the interest of scientists and computer buffs alike.

Sanders, a long-time meteorologist and professor emeritus at MIT, was quoted recently as saying that even with the use of modern supercomputers, average temperature predictions usually miss the mark and become less accurate as the length of the extended forecast increases.

"Computers have helped to extend the range in which we think we can make a statement for three or four days ahead," but the skill level of those forecasts — a comparison against the average high and low temperatures for that day — remains moderate, he said.

"We don't pay as close attention to the noncomputer aspects [of weather forecasting] as we did years ago," Sanders said, explaining that it is often those aspects that make the difference in a local forecast. "It's possible to look at the automated guidance of the computer without giving too much thought to anything else."

At the National Weather Service's National Meteorological Center in Camp Springs, Md., Director William Bonner said that computers produce only the base of the forecast — the region's high and low pressure areas. A truly accurate area forecast depends on the savvy of the local meteorologists.

Using a Control Data Corp. Cyber 205 mainframe, which will soon be interfaced with a National Advanced Systems, Inc. AS/9040 mainframe, the center creates atmospheric models and produces about 600 forecast maps of global high and low pressure areas.

Even with the help of supercomputers, Bonner said, the so-called skill level, or accuracy level, diminishes as the forecast is extended. "Skill levels go to about day six," he said. "By the sixth or seventh day, the skill level is as good as gone."

But without the help of the computers, meteorologists would not even be able to provide extended forecasts, Bonner said. "There have been major improvements in our ability to forecast beyond one day," he said, adding, "the number of forecasts that are way off has diminished."

According to Bonner, today the number of forecasts that are off by 10 or more degrees Fahrenheit have decreased by a factor of two over the last 15 years.

Predictions of rainfall, Bonner said, are about 85% accurate. The accuracy of those forecasts, he said, has improved over the last 15 years — "a direct result of better forecasts

from numerical computer models." Like Bonner, many meteorologists are thankful their forecasts have been aided by computer-produced information, but at times those meteorologists are forced to turn elsewhere.

"I deviate from the computer quite a lot when it's obvious that things aren't happening as they should be," said 40-year meteorology veteran Don Kent, whose forecasts are broadcast on nine radio stations in the Boston area.

One day in August, weather forecasts predicted cloudy, warm and humid weather, but to the chagrin of the weather specialists, rain developed in the early morning. It was

only after Kent looked outside, he said, that he added a "moderate rain and drizzle" to his forecast prediction.

"With the crazy weather we have now, there's no man alive, no computer in existence or even any programmer that can predict what's going on," he said.

Nevertheless, he added, "computers are responsible for the ever-so-gradual improvement in the forecasts," particularly the ability to include details like barometric pressure and humidity. But, Kent said, "I'm not afraid to throw [the computer's predictions] out when my common sense is telling me something else."

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METCALFE from page 16

chips. I expect there to be a number of transport-level chips in the next two to three years. That's great, because although it won't lower the chip count on the board, it will reduce the processing and software load of the processor.

Q If you could do it all over again, what would you change in Ethernet?

If I had it to do over again, I would have done a better job at getting Ethernet and its associated products to market sooner than actually happened. Ethernet wasn't announced by Xerox until 1980.

And I think I would have spent more time working the IBM question. This is much too egomaniacal, but I feel that IBM got its technical machismo up against Ethernet. I think I would have worked harder at getting IBM to realize that Ethernet actually works and that it shouldn't believe that it doesn't work.



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NEWS

Bill has provision to help DOD spot overpriced parts

By Mitchell Burtis
Of Washington Bureau

WASHINGTON, D.C. — The U.S. Senate — helping to put an end to military purchases of \$436 hamsters and 16,400 wrenches — recently approved legislation encouraging the Department of Defense (DOD) to upgrade the computer software used at its procurement centers so that officials can spot overcharges for spare parts and tools.

The Senate action was prompted by testimony at congressional hearings stating that the antiquated software used at many military procurement offices cannot produce price variance reports that would flag exorbitant price increases. Pentagon of-

ficials testified that they agree improvements are needed, and some reforms are under way.

The little-noticed legislative provision, sponsored by Sen. Jeff Bingaman (D-N.M.), requires the Pentagon to produce a Computer Capability Improvement Plan. The provision was added to a major procurement reform bill (S. 2489) that the Senate approved on Aug. 7 without dissent, and it is likely to be enacted sometime next month.

Antiquated software

Bingaman said that computer software for tracking spare parts data is "grossly inadequate and antiquated" at some Defense Department procure-

ment offices. Bingaman added this has contributed to increased costs for spare parts because good procurement officers do not know what price was paid previously for any given part.

The Defense Department will spend an estimated \$18 million on spare parts this year. According to a recent audit by the department's inspector general, it was found that 823 of the 2,300 items sampled were overpriced.

The Bingaman amendment requires the Secretary of Defense to submit a plan to "improve substantially the Department of Defense computer capability to store and rapidly access data that is needed for the

efficient procurement of spare parts." It specifically calls for a data base that includes price and procurement history, parts identification, sources of supply and other relevant data.

The senator said that although the Defense Department has taken initial steps to deal with the problem, the legislation will provide additional impetus for action.

At hearings held by the Senate Armed Services Committee last fall, the U.S. General Accounting Office presented testimony that much of the military's procurement software is outdated and that "the use of computers to identify spare parts price variances is very limited."

IIIE seminars set for fall

NORCROSS, Ga. — "Manufacturing Challenge: Creating the Automated Factory," a two-day seminar sponsored by the Institute of Industrial Engineers (IIIE), plans to address the problems of integrating factory components.

The seminar will be held in Chicago Sept. 13-14 and San Francisco Sept. 24-25.

The seminar leader will be James A. Tompkins, president of Tompkins Associates, Inc., a consulting firm specializing in facilities planning, material handling, warehousing and factory automation.

The seminar is scheduled to discuss, among other topics, the automated factory and state-of-the-art factory facilities.

The registration fee is \$425 for IIIE members; \$485 for nonmembers.

Additional information is available from IIIE, which is located at 25 Technology Park/Arlanta, Norcross, Ga. 30062.

ABA to meet in New Orleans

NEW ORLEANS — "The Inside Track — Gaining the Distinct Advantage" will be the theme of the American Bankers Association's (ABA) 1984 National Conference on Human Resources to be held at the Fairmont Hotel here Sept. 16-19.

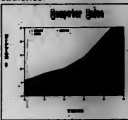
The conference will feature a three-track session schedule with workshops devoted to "Technology Innovations," "Productivity and Mergers" and "Acquisitions and Diversifications." In addition, a special preconference workshop is scheduled to address "Flexible Employee Benefits."

The cost to attend is \$455 for ABA members and \$595 for nonmembers. The workshop is \$200 for ABA members and \$275 for nonmembers.

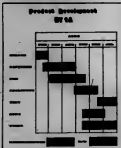
More information on the conference is available from the Bankers' Education Network, Educational Services Department, c/o ABA, 1120 Connecticut Ave. N.W., Washington, D.C. 20006.

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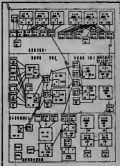
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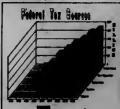
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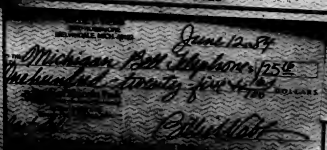
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NEWS

Air Force audit discloses costly waste of spare parts

Effort under way to rewrite inventory control programs, add management input

By David Ottens
CW Staff

WASHINGTON, D.C. — The U.S. Air Force, in response to an internal audit that revealed the service has been junking millions of dollars of needed spare parts, is revising its computer system software in an effort to fix a costly and embarrassing problem.

During the past 10 years, the Air Force revealed recently, it has disposed of millions of dollars of usable spare parts. In some cases, the service then repurchased those parts from salvage dealers at higher prices. Air Force officials disclosed the

'We needed more management quality control rather than overemphasis on computers.'

— Col. B.B. Brannan

problem during testimony last June before the House Armed Services Subcommittee on Investigations.

In 1983 alone, the Air Force junked \$700 million in spare parts, a significant amount of which was usable, Thomas E. Cooper, the Air Force's assistant secretary for research, development and logistics, told members of the subcommittee.

Cooper referred to the disposal problem as a "horror story."

Air Force inventory control procedures in place since 1974 have required the automatic disposal of any spare part not requested within the past year. Two different computer systems — one operated by the Air Force Logistics Command (AFLC) and another used at approximately

100 military bases worldwide — have been used for identifying the parts and shipping them out for disposal.

Air Force officials said in recent telephone interviews that the problems arose from a combination of insufficient management supervision and outdated computer hardware and software.

The software, which resides on an old Control Data Corp. 3600 computer operating in a batch processing mode, is designed so that an item needs for disposal unless a human intervenes to stop it. Air Force officials asserted, however, that many times information was not getting to an item manager before he had time to stop the disposal process.

Relied on computers

"We did, in fact, rely heavily on computers," said Col. C.B. Brannan, chief of the support policy and systems branch. "But we don't think we relied too much on them."

"I think that management didn't put enough controls to prevent human errors," he added. "We needed more management quality control rather than overemphasis on computers."

Since the revelations in June, the Air Force has acted to rewrite its data management software programs, which one official estimated to be about 10 years old. That work is being done by programmers at AFLC headquarters at Wright-Patterson Air Force Base in Ohio.

"Our program changes really revolve around putting some management logic into the processing of the programs," said Col. Jim Johnston, AFLC director of supply. "All we're doing is reversing the program logic. The item manager will have to take specific action to dispose of an item, as opposed to previously taking action to retain it."

Disposal freeze

Most of the software changes are expected to be effective in October, officials said. Meanwhile, Air Force Secretary Verne Orr has ordered an indefinite freeze on all spare parts disposal.

Other computer-related changes affecting Air Force spare parts disposal are also occurring at overseas bases. The Air Force is converting from old Univac 1050 computers to Sperry Corp. 1100/60 mainframes at its foreign bases. Software programs for those systems are being rewritten to improve inventory control, officials said.

The Air Force is in the process of reviewing bids from two computer vendors for the development of a new data management system that will, among other improvements, reportedly provide item managers with on-line access through desktop terminals to a central data base, officials said.

"We believe we've plugged all our systematic loopholes, and anything that slips through like that in the future will be the result of human error," Johnston said. "But with the work load that's on the individual item managers, I wouldn't even begin to estimate how much will or will not slip through."



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A Look at 43 Micros From Nine Vendors

While not as frantic as it has been in the past two years, the microcomputer business still appears to be in a boom period.

Many manufacturers with successful microcomputers spent the past year modifying their product lines to appeal to a broader audience. IBM, for example, announced the Personal Computer AT — a multiuser high-end system — and the low-end PCjr. Apple Computer, Inc. also punched up the high and low ends with a beefed-up version of the Lisa and the low-end Macintosh.

For other companies, the past year has not been happy. Manufacturer of Apple-compatible systems, Franklin Computer, Inc., for example, filed for Chapter 11.

A new class of microcomputer, the mul-

tiuser supermicro, became more popular in 1984. And as could be expected, more micro companies jumped into the multiuser market.

Reflecting analysts' predictions that the major players offering microcomputers will narrow in a handful, *Computerworld's* Hardware Roundup includes half as many companies as were listed last year. Several market research firms were contacted to determine the top 20 micro makers, based on 1982 financial results. Each told the same story: After the top 10 companies, it becomes impossible to rank firms 11 through 20. So we settled for the top 10 this year, based on a list supplied by Future Computing, Inc. in Richardson, Texas. Only the top nine companies wound up being listed in this year's roundup.

The 10th company, Convergent Technologies, Inc., does not sell systems to end users and could not supply single-unit pricing information for its systems.

As with the first two installments of the Hardware Roundup, this last segment is not intended to be used as a buyer's guide. *Computerworld* does not endorse any vendor's product or architecture, and, unless otherwise noted, all of the information contained in the following charts should be considered to be the vendors' claims.

Contributing to this report were *Computerworld* staff writers James Connolly, John Dennard and Tom Henkel.

HARDWARE ROUNDUP

COMPAQ COMPUTER CORP.

Characteristics	System	Compaq Portable	Compaq Plus	Model 1	Model 2	Model 3	Model 4
Address Range		16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
Communications Protocols		Asynchronous, Synchronous	Asynchronous, Synchronous	Asynchronous, Synchronous	Asynchronous, Synchronous	Asynchronous, Synchronous	Asynchronous, Synchronous
Memory Size in Bytes (Minimum-Maximum)		128K-640K	128K-640K	128K-640K	256K-640K	256K-640K	256K-640K
Purchase Price (Basic Configuration)		\$2,499	\$4,399	\$2,499	\$2,599	\$4,399	\$7,199
Operating System		MS-DOS	MS-DOS	MS-DOS	MS-DOS	MS-DOS	MS-DOS
I/O Ports		2	2	2	2	2	2
I/O Channel Speed (MB/Sec)		To 18.2K	To 18.2K	To 18.2K	To 18.2K	To 18.2K	To 18.2K

1. Optional.

TELEVIDEO SYSTEMS, INC.

Characteristics	System	Personal Mini	TS 1600 Plus	TS 1600H Plus	TPC 11	TS 804	TS 804/30	TS 803	PS MicroStation
Address Range		16 MB	16 MB	16 MB	16 MB	8 MB	8 MB	8 MB	16 MB
Communications Protocols		SOLC	Asynchronous	Asynchronous	SOLC	SOLC	SOLC	Asynchronous	SOLC
Memory Size in Bytes (Minimum-Maximum)		256K-512K	256K-512K	256K-512K	256K-512K	32K	64K	256K-128K	256K-640K
Purchase Price (Basic Configuration)		\$6,995	\$2,995	\$4,495	\$2,095 ¹	\$4,495	\$6,995	\$2,495	\$2,195
Operating System		InfoSphere	Telidon	Telidon	Telidon	CP/M Plus, MP/W 5.0, Unix	Unix, CP/M	CP/M	Unix
I/O Ports		4	11	2	2	4	4	4	2
I/O Channel Speed (MB/Sec)		To 800K	To 8.5K	To 8.5K	To 8.5K	To 18.2K	To 800K	To 18.2K	To 800K

1. One drive.

DIGITAL EQUIPMENT CORP.

Characteristics	System	Alpha 100	Decimate 6	Professional 300
Address Range		8 MB-32 MB	16 MB	16 MB
Communications Protocols		Synchronous, Asynchronous	Synchronous, Asynchronous	Synchronous, Asynchronous
Memory Size in Bytes (Minimum-Maximum)		512K-2048K	512K	320K
Purchase Price (Basic Configuration)		\$2,695	\$3,745	\$3,995
Operating System		CP/M (MS-DOS, MP/W 5.0)	MP/W 5.0, MS-DOS	MP/W 5.0, MS-DOS
I/O Ports		2	2	3
I/O Channel Speed (MB/Sec)		To 18.2K	To 18.2K	To 18.2K

KAYPRO CORP.

Characteristics	System	Kaypro 2	Kaypro 4	Kaypro 16
Address Range		8 MB	8 MB	16 MB
Communications Protocols		Asynchronous	Asynchronous	Asynchronous
Memory Size in Bytes (Minimum-Maximum)		256K	512K	512K
Purchase Price (Basic Configuration)		\$1,295	\$1,995	\$2,795
Operating System		CP/M	CP/M	MP/W 5.0
I/O Ports		3	3	3
I/O Channel Speed (MB/Sec)		To 18.2K	To 18.2K	To 18.2K

IBM

Characteristics	System	PC	Personal Computer	Personal Computer XT	Personal Computer AT
Address Range		1 MB	1 MB	1 MB	1 MB
Communications Protocols		Asynchronous, Synchronous, SOLC	Asynchronous, Synchronous, SOLC	Asynchronous, Synchronous, SOLC	Asynchronous, Synchronous, SOLC, PC Network
Memory Size in Bytes (Minimum-Maximum)		160K-256K	160K-256K	160K-640K	160K-640K
Purchase Price (Basic Configuration)		\$599	\$2,395	\$2,399	\$4,199
Operating System		MS-DOS	MS-DOS, MP/W 5.0	MS-DOS, MP/W 5.0	MS-DOS, MP/W 5.0
I/O Ports		1	1	1	1
I/O Channel Speed (MB/Sec)		To 18.2K	To 18.2K	To 18.2K	To 18.2K

1. Synchronous, 160K-256K.

TANDY CORP.'S RADIO SHACK

Characteristics	System	TRE-80 Model 100	TRE-80 Model 4, 4P	TRE-80 Color Computer 2	TRE-80 Model 12	TRE-80 Model 16 6	Tandy 2000
Address Range		8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
Communications Protocols		Asynchronous	Asynchronous	Asynchronous	Asynchronous, Binary Synchronous (optional)	Asynchronous, Binary Synchronous (optional)	Asynchronous
Memory Size in Bytes (Minimum-Maximum)		64K-320K	64K-128K	128K-640K	128K-640K	128K-640K	128K-640K
Purchase Price (Basic Configuration)		\$599	\$1,399	\$160	\$2,799	\$3,999	\$2,999
Operating System		MS-DOS or CP/M Plus	TRE-DOS or CP/M Plus	TRE-DOS or CP/M Plus	TRE-DOS or CP/M Plus	TRE-DOS or CP/M Plus	MS-DOS
I/O Ports		5	2	2	3	3	2
I/O Channel Speed (MB/Sec)		To 18.2K	To 18.2K	To 18.2K	To 18.2K	To 18.2K	To 18.2K

HARDWARE ROUNDUP

HEWLETT-PACKARD CO.

Characteristics	System	HP 110	HP 100	HP 80	HP 85, HP 87
Computations Per Second	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Purchase Price (Basic Configuration)		\$2,595	\$3,495	\$2,790	\$1,795
I/O Ports		2	4	4	4

ZENITH RADIO CORP.

Characteristics	System	Z100	Z100	Z100
Computations Per Second	Synchronous, Asynchronous	Synchronous, Asynchronous	Synchronous, Asynchronous	Synchronous, Asynchronous
Purchase Price (Basic Configuration)		\$3,025	\$2,195	\$2,385
I/O Ports		3	3	3

APPLE COMPUTER, INC.

Characteristics	System	Apple IIe	Apple IIc	Macintosh	Line 2	Apple II+
Computations Per Second	Asynchronous	Asynchronous	Asynchronous	Synchronous, Asynchronous	Synchronous, Asynchronous	Asynchronous
Purchase Price (Basic Configuration)		\$1,295	\$895	\$2,495	\$3,495	\$2,495
I/O Ports		5	10*	5	0*	0*

1. CP/M, MS-DOS options.
2. Eight are expansion slots needing interface cards.
3. Four are expansion slots needing interface cards.
4. 5.6K recommended.
5. Both serial port, parallel port optional.
6. CP/M optional.
7. There are expansion slots needing interface cards.

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NEWS

DOD finances Case Western biochip research center

By David Ottens
Circuit

CLEVELAND — Case Western Reserve University has established a major research facility here to study biochip — polymeric film — technology and its potential applications in electronics and optics.

The four-year program is being funded by a \$2.4 million grant from the U.S. Department of Defense's (DOD) Defense Advanced Research Projects Agency Group.

The Case Western program, begun about six months ago, is concentrating on developing polymeric materials for potential use in a variety of both simple and sophisticated applications: chemical sensors, optical fibers, flat-panel displays and computer keyboards, to name just a few. While the scientific community refers to this field as molecular electronics, it is perhaps better known under the name of biochips.

The university has set up a 3,600-sq-ft "ultraclean" facility, believed to be the largest of its kind in the world, according to Dr. Scott Rickert, director of the Polymer Microdevice Laboratory at

Case Western. The laboratory is staffed by faculty and other researchers from Case Western's Department of Macromolecular Science and Department of Electrical Engineering and Applied Physics.

"The fundamental premise of the laboratory is that there is a lot of outstanding promise for the use of organic-based polymeric films, because they have exciting properties such as unusual temperature- and pressure-sensing capabilities," Rickert said.

The unusual properties of polymers have been known for some time. What remains to be shown is whether a way can be found to incorporate this biotechnology into a commercial product, Rickert said.

The method being used exclusively at the laboratory is known as Langmuir film technology, named after Irving Langmuir, an American scientist who won the 1932 Nobel Prize in chemistry.

Langmuir film technology is used to form very thin films about 3 nanometers thick. These films can be stacked on top of each other to any desired thickness,

with the identical properties of the first film transmitted to all, Rickert said. "You can tailor a given material to a given task," he added.

One advantage of polymers is that they can be made in a fairly simple process, and their properties can be changed by altering the chemistry, Rickert said. "They have a lot of advantages over silicon or gallium arsenide because with these materials, what you have is what you get," he added.

Moreover, polymer devices "can be produced at room temperature without a lot of sophisticated, expensive equipment," he said. "So your costs of doing this process are in a different league than, let's say, silicon fabrication."

Rickert pointed out that the laboratory is trying to develop a hybrid device using polymer and silicon. "You have to be able to crawl before you can walk, and coming up with hybrid systems is the most appealing at this point."

The Defense Department is believed to be interested in supporting research into polymer microcircuitry because of its potential switch-

ing speed, insensitivity to radiation from high-energy blasts and lightweight, nature, Rickert said.

The laboratory's main accomplishment so far has been documenting that the preparation of polymer films in a clean-room environment leads to significantly enhanced film quality. The next task is to begin computerizing the process of making the Langmuir films, he said.

To boost its research efforts, Case Western is attempting to raise another \$2 million or more from some

large electronics and chemical industry sponsors.

Rickert said this area of polymer research is still an unproven technology that nevertheless holds a lot of promise. What is needed is some strong engineering and fabrication technology, he said.

"The best computer in the world is the human brain, which of course is completely based on polymers," Rickert said. "If the brain is doing that, we should be able to make our systems work too."

GAO calls for consolidated federal payroll

WASHINGTON, D.C. — The 76 civilian payroll DP systems operated by the federal government should be consolidated to save millions of dollars in software development and maintenance

costs, according to a recent report prepared by the U.S. General Accounting Office (GAO).

"Payroll systems managers say [the] GAO estimate that from fiscal years 1983

through 1987 the agencies plan to spend about \$215 million in software development efforts alone, averaging about \$3 million per system," the GAO report stated.

The report, commissioned by Sen. Frank R. Lautenberg (D-N.J.), said the White House Office of Management and Budget (OMB) should oversee the consolidation effort and noted that the OMB has taken several initiatives toward this end. Ultimately, the GAO said, the payroll systems could be consolidated into a few regional processing centers using standardized software.

Until then, according to the GAO, each agency should consolidate its multiple systems into a single agency personnel system, and small, costly systems should obtain payroll services from larger systems that take advantage of economies of scale or from outside service bureaus.

Payroll operating costs vary widely within the federal government, the GAO said, with annual costs ranging from \$64 to \$374 per person. Larger systems generally had lower operating costs. The GAO said the OMB should develop operating cost standards because many payroll managers do not have a productivity measurement system in place.

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NEWS

Towns use custom package to retrieve missing dogs

Other programs from software developer help communities with day-to-day tasks

SANTAQUIN, Utah — When a golden retriever was reported wandering in the neighborhood of E. 900 North St. here recently, the animal control officer in this community of 3,000 tapped into the town's Four-Phase Systems, Inc.'s IV/60 minicomputer to find out the dog's name.

The officer used a local-government-tailored program developed by Bruce Hyman of Salt Lake City, a combination accountant and programmer and president of City/Soft, a software development firm.

By correlating every golden retriever in the neighborhood with a report on a missing dog, the officer was able to determine the dog's name — **Buff**.

Other City/Soft programs — which have no commercial names — serve general ledger, accounts receivable, utility billing, personnel management and business licensing as well as dog licensing functions. The programs are being used in five Utah communities and in Eureka, Calif., a community of 30,000 people.

Whereas a software company usually licenses or sells products to users, the users of software developed by City/Soft make a contribution to the city government computer trust for use of the packages.

Hyman said he views as unfair the ability of many large communities to hire DP staff while many small communities cannot.

All contributions are used to develop new software packages, Hyman said. "We're not in the business of marketing software; we're more in the business of maintaining it."

Hyman got the idea while his auditing firm, Andrews, Hyman and Co., worked for six years in the Utah State Auditor's Office auditing local governments. Many times, Hyman said, he witnessed computer vendors shaming communities after selling a product.

For want of a repair or of information on how to operate a system, Hyman said, "Many communities weren't using the equipment; they wasted their money." He said he views as unfair the ability of many large communities to hire DP staff while many small communities cannot.

Initial software development costs were shared by a number of communities. Since then, the Utah governments of Murray, Juab County and Price River Water District have signed on for City/Soft software.

Hyman incorporates the suggestions of his municipal users to upgrade his programs. "Everyone's ideas really add to the whole thing; we put all the best ideas together in one package," he said.

The dog licensing program, developed with the aid of animal control officers, prepares a file on each dog

owner. The file includes license number, license renewal date, address, a description of the dog and the names and addresses of any former owners. The file is used to send out renewal notices and to identify stray dogs.

Small communities like Santaquin have pooled their resources to purchase data processing equipment. For example, Santaquin's Four-Phase equipment cost the city \$29,000, Hyman said, while the suggested purchase price is \$46,000.

System storage capacity varies by community population. Santaquin has storage of 12.5M bytes, while the community of W. Georgia — with a

population of 30,000 — has a capacity of 184M bytes, Hyman said.

At least one user credits Hyman with being a leader in the development of software for use by municipal governments. Sam Sellers, Santaquin's city recorder, said that while he investigated software from a number of companies, including IBM, NCR Corp. and Burroughs Corp., "They haven't got the sophistication Bruce has. He has the most thorough system," Sellers said.

Sellers said that since Santaquin installed its Four-Phase System IV/60 mini in June, productivity has increased dramatically. A payroll job

that took him almost two days to perform in the past now takes only 20 minutes, he said. The only problem he has experienced was due to a faulty ground wire that joined the IV/60 with an occasional 280 volts of electricity and caused system failure, Sellers said.

Written originally for an IBM 370, the municipal programs were downgraded to the Four-Phase IV/60 mini. "It's an enormous package for a small mini, but Four-Phase does an extremely good job with it," Hyman said. The Four-Phase mini was chosen because the state has a contract to buy from the firm, he said.



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NEWS

Library of Congress system keys on Oriental symbols

WASHINGTON, D.C. — Despite daunting odds and considerable skepticism, the U.S. Library of Congress here is on the verge of fully implementing an automated cataloging system for East Asian books that enables scholars to search for books using the Chinese, Japanese and Korean language characters.

The notion that libraries could use on-line terminals to catalog thousands of Oriental books in the vernacular was considered a wild scheme back in 1979 when the program was first announced, according to John Hanger, director of program coordination for the Research Library Group, Inc. (RLG) of Stanford, Calif., which developed the system.

The characters look like complex stick-figure houses, and the Chinese language alone has more than 4,000 frequently used characters.

But, Hanger said, "the skepticism has fallen away very fast" now that the Chinese-Japanese-Korean (CJK) system is operating at the Library of Congress and 18 other libraries throughout North America and has already cataloged more than 30,000 volumes.

This fall, the Library of Congress plans to move from the test phase to full-scale implementation so that by year-end, all East Asian volumes received there will be cataloged in a national library data base using 84 CJK terminals, according to Dr. Harriet

Zais-Gabbert, coordinator of the Library's CJK project.

Skeptics have been quieted because the CJK system users have found that it takes only five or six months — not several years — to outpace the manual cataloging methods and that cataloging clerks do not require specialized clerks, but can be handled by the regular library staff, Hanger and Zais-Gabbert said.

The critical element of the CJK system is a terminal made by the Transtech International Corp. of Natick, Mass., that has a total of 179 keys on its keyboard — three times as many as the standard keyboard, but far fewer than the Chinese typewriter's 3,000 keys.

The operator of the CJK terminal enters individual components, or word roots, of the Oriental characters, and then the computer combines those components to form the actual character. (This multistroke method broke the keyboard at a manageable size.)

"We break a character into word roots," explained Peter Kang, general manager of Transtech. "Some characters require only one keystroke, while others combine two, three or more word roots to compose a character."

On the keyboard, 133 of the keys are character keys, each of which contains from two to five components of the Chinese, Japanese and Korean scripts as well as Roman letters for Western languages. To switch from one language to another, the operator uses the four function keys, one for each language.

Accompanying the terminal is a dot matrix printer and a cluster controller (a Digital Equipment Corp. LSI-11/23 microprocessor) that can support four terminals and communicate with the RLG's Research Libraries Information Network, a comput-

The operator of the CJK terminal enters individual components, or word roots, of the Oriental characters, and then the computer combines those components to form the actual character.

erized bibliographic utility at Stanford University.

"It essentially removes the location of East Asian libraries," Hanger said. "It permits us to get records of East Asian materials into the same data base as all of our Western materials."

As a practical matter, the CJK system enables the libraries to share an automated catalogue of East Asian books, which in turn enables scholars to search for books using the native language in its vernacular form, rather than the Roman version.

Zais-Gabbert, who is a senior automation planning specialist at the Library of Congress, said scholars consider the Romanized version very inferior because many Chinese words sound alike, so they are assigned the same Roman words, but actually have different meanings. "If you can use the real character, you lose the ambiguities," she said.

Consequently, Oriental scholars consider the CJK system a revolutionary improvement. Zais-Gabbert said that when she showed it to Dr. J. Thomas Rimer, chief of Asian research at the Library of Congress, "He was really quite bowled over by it all."

But Zais-Gabbert said some scholars may be slow to make full use of the system's vernacular search capability. "Oriental libraries are so traditional, I think it'll take a generation for them to get used to it," she said.

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On-line system keeps tabs on aircraft firm's inventory

By Kathleen Burton
Chief Cost Editor

SEATTLE — Boeing Aerospace Co. is using computers here to tackle the enormous task of managing more than 500,000 parts used to manufacture aircraft and defense weapons for Boeing's military customers, who represent 40% of the company's overall commercial business.

Boeing Aerospace orders 3,000 new parts a week, ranging from a minuscule screw used in a highly sophisticated EC-4 missile to a wing brace for a U.S. Navy F-3 aircraft. A Boeing EC-4 missile, for example, contains 37,000 parts, each of which must be ordered, inventoried, stockpiled and backed with spares.

Boeing's on-line Material Planning and Reporting (MP&R) system, developed in-house and incorporated in May 1983, solves a lot of headaches for the company.

"In our tightly regulated government weapons environment, we deal with huge numbers of parts and must deliver products to our military clients on time and within budget or face substantial financial penalties," said Del Rowan, manager of public relations at Boeing Computer Services.

Complex task

"The task of parts inventory and management at Boeing is extremely complex," according to Rowan. With defense delivery dates often projected three years ahead, Boeing engi-

neers sometimes make several design changes before final production, he said. As a result, "no two planes go out of here exactly alike," Rowan said.

MP&R took five years to implement and has several advantages over previous batch inventory control methods, according to Harvey Ford, business systems manager for Boeing Computer Services.

"We used to have 13 separate batch systems that didn't talk to each other, and the information was often out of date. Now, with less money tied up in inventory and storage, MP&R will let us save millions of dollars each year, attract more customers and make more competitive bids,"

he said.

According to Ford, the system will pay for itself in a year and a half. Since MP&R's implementation, Boeing's inventory management staff has been reduced by 30%, and lead time to reorder a part has been reduced by more than half. It used to take up to 53 days to enter a design change into the system; it now takes three days maximum, Ford said.

MP&R is accessed via one of the company's 700 terminals and runs on an IBM 3081 mainframe with a Boeing-developed Materials Planning and Release software package. It offers specific information on a part's destination shop, its factory code and the overall project status.

To spearhead the new system, an independent Inventory Management Operation was created, combining staff from engineering, manufacturing and inventory control divisions. The \$46 million implementation costs were shared by Boeing Computer Services, which provided hardware, software and systems design, and Boeing Aerospace, which defined, implemented and debugged the final system.

An MP&R interface has been funded for 1986 that will designate immediate on-line confirmation of a part's availability. Eventually, Ford said, "automated robots will pull parts and bring them directly onto the factory floor."

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WASHINGTON, D.C. — The Battelle Memorial Institute and American University will cosponsor a conference on government regulation of offshore money flow, electronic banking and currency reporting, to be held at the university's campus here Sept. 24-25.

Among the topics of the conference will be recent and planned federal regulation of currency reporting and offshore banking and the relationship of those regulations to narcotics trafficking and money laundering. The U.S. Treasury Department regulations proposed in the Federal Register of April 5 will reportedly be discussed.

Speakers for the conference will include Richard Shriver, assistant treasury secretary for electronic systems and information technology; John Walker, assistant treasury secretary for enforcement; and Gary Lynch of the enforcement division of the Securities and Exchange Commission.

The program was reportedly designed for attorneys representing banks and securities houses, bank and electronic funds transfer officials and security professionals. Registration is priced at \$425, which includes instructional materials and a luncheon.

Additional information is available from the Office of Continuing Education and Conferences, American University, 4400 Massachusetts Ave. N.W., Washington, D.C. 20016.

NEWS

French ADI chartered to promote computers

By Jo Cohen
Special to CW

PARIS — "We have the human seed capital to open French minds to information technology," proclaimed Charlie Garrigues, president of France's Agency for Informatics (ADI). ADI's charter is to promote and disperse the use of informa-

tion technology in France. Garrigues, one of the nation's leading computer activists, confided his ambitious plans during a recent interview here.

The government-initiated plan to push technology is aimed at the ordinary French citizen. It is not an industry-sponsored project with short-term goals to push computers into the educational system or the business world, Garrigues explained. Rather, the plan is an elaborate long-term endeavor to make the French nation more information-oriented and to establish a broad indigenous market.

Garrigues summarized: "ADI is there to help people get

See ADI page 34

Cohen is the managing editor of *Le Monde Informatique*, the French sister-publication of *Computerworld*, in which this article originally appeared. It was made available through the CW International News Network.



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NEWS

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along with new developments. We want them to be able to cope. We are very pleased with our slogan — "ADI, a partner to success." — ADI's attack is four-pronged.

■ To accelerate the transfer of technology between laboratories, industry and end users.

■ To modernize technical development by coordination of activities in a number of specific technological fields.

■ To prepare the people for the "world of the future," including training, education and demonstration.

■ To stimulate regional technical development.

"The social impact of technology — the new freedom from time and from distance to communicate that it brings

than a smoke screen for a protectionist or nationalistic industrial policy. "Of course we try to use French computers for our projects... but it would be foolish to restrict us to domestic suppliers. We work mostly on software development, and the results of this work have, in many cases, been commercialized. In the software field, we are trying to solve some of the portability problems, which is the opposite of confining ourselves to a limited number

of suppliers.

"I believe that we have to keep both eyes on what happens elsewhere [in the world] and [be prepared to] use that. Of course the government would like our efforts to have a positive effect on [domestic] industrial activities in the longer run, but we are presently involved in the social ramifications of information technology rather than the economic ones," Garrigues said.

France's minister of In-

dustry and Research, Laurent Fabius, mirrored many of Garrigues' feelings, heralding computer literacy as a potential economic trump card for France. He believes everybody should accept the technology as a second language — a tool with which to work and communicate. Fabius contended that the French language of the next century will be characterized by the French people's familiarity with computers and telecommunications.

Telecommunications has traditionally been France's long suit, Fabius pointed out. France was one of the first countries to conduct large-scale experiments and to implement general public information services including videotex and electronic phone directory information systems. While these projects have not met with universal success, they have not failed, and they are now growing away from their infant stages, Fabius contended.

'Our goal is to open schools, open the mind, open the people for the information technology.'

— Charles Garrigues, ADI president

— is not easy to handle. We experienced this ourselves at ADI with the implementation of an advanced electronic mail system.

"Our goal is to open schools, open the mind, open the people for the information technology and start the snowball rolling."

The French, however, are not yet ready to embrace technology, Garrigues noted. He explained that, per capita, France has less than one-fifth of the computers England has and one-third of those West Germany has. France is behind in home computers partly because of peculiarities in the French color television standards and also because of language problems, according to Garrigues.

Although ADI is a division of the French Ministry of Industry and Research, Garrigues vehemently denied charges that ADI is no more

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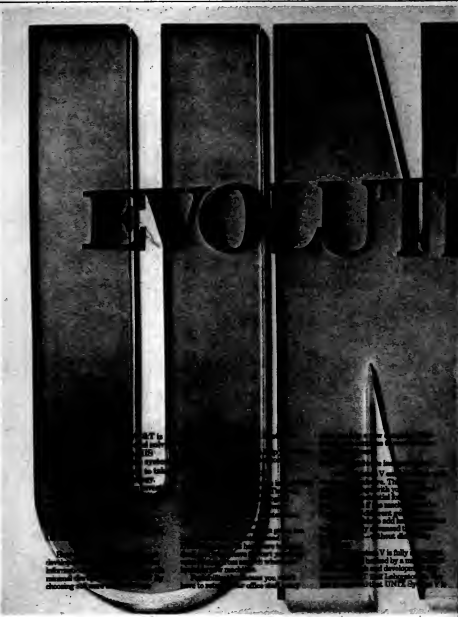
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NEWS



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AUSTRALIA

ADLAIDE — With the domestic production of very large-scale integration-designed chips, Australia has tapped the potential to earn \$42.5 million over the next five years, according to one

government official here. The claim was made during the recent opening of Austek Microsystems Pty. Ltd., Australia's first chip manufacturing facility.

CANBERRA — The first phase of the Department of Social Security's \$66 million Striplan computer network is due to be operational in six New South Wales offices by Oct. 12, despite union bans against the implementation. The first available applica-

tions reportedly will be word processing, data entry, on-line manuals and on-line inquiry, according to an agency spokesman.

CHINA

BEIJING — During the first half of 1984, China produced 135 fourth-generation microcomputer and mainframe systems, 30% more than in 1983, and 9,517 microcomputers, 80% more

than last year, according to the results of a recent study from International Data Corp. Asia Ltd. The total output of the Chinese computer industry in 1983 was valued at \$400 million, the study said.

BEIJING — The first IBM users group meeting took place here last month to discuss Chinese IBM users' common interests and problems. Although IBM did not begin selling computers in China

until 1979, it is estimated that its installed base here will be 100 systems by the end of 1984.

JAPAN

TOKYO — Hitachi Ltd. has unveiled the VI series and VTX series of videotext equipment. The first two products, the VI-1000C and VI-100C, are data input devices that reportedly can handle geometric designs as well as characters and figures. The VTX-2000 and VTX-3000 are peripherals to look up the data, according to the vendor. Material reportedly is captured by camera and scanner and can be displayed in an enlarged or contracted form, with color added.

WEST GERMANY

FRANKFURT — The microcomputer market claimed the highest growth rate in the West German DP sector during 1983, with 647,000 units valued at \$486 million sold, according to a study from Diebold Deutschland GmbH. Commodore Business Machines, Inc. continues to be the number one micro maker here, with a market share of 32%, followed by Sinclair Research Ltd., with a 15% share, and Apple Computer, Inc., with 11%.

MUNICH — Nixdorf Computer AG apparently has more problems with its office automation system, the 88BX, than it originally admitted. The West German vendor has delayed the product's release date until January 1984, and rumors that Nixdorf might scrap the whole project are running through the DP community here. R&D funding for the yet-to-be-released system came from the Federal Ministry of Technology.

MUNICH — Revenue jumped 33% at Digital Equipment Corp.'s West German subsidiary, as of the end of their fiscal year on June 30, 1984. Willi Kuster, director of DEC GmbH, attributed these results to increased demand for VAX systems, Micro PDP-11 systems and workstations. He added that the end of a shortage of main storage media had also helped revenues.

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NEWS

CALENDAR

WEEK OF SEPT. 16

SEPTEMBER 20-21, WASHINGTON, D.C. — IBM/VS DB/DC Concepts. Contact: Data Base Management, Inc., 1075 Toland Trpk., Manchester, Conn. 06040.

SEPTEMBER 20-21, CHICAGO — Data Communications Advanced Concepts, Products and Services. Contact: Datapro Research Corp., 1805 Underwood Blvd., Detroit, N.J. 08075. Also being held Sept. 24-26 in Washington, D.C.

SEPTEMBER 20-21, NEW YORK — Communications and Compatibility for Micros in Mainframes. Contact: Datapro Research Corp., 1805 Underwood Blvd., Detroit, N.J. 08075.

SEPTEMBER 20-21, WASHINGTON, D.C. — Data Resource Management Concepts, Guidelines and Capabilities. Contact: Datapro Research Corp., 1805 Underwood Blvd., Detroit, N.J. 08075.

SEPTEMBER 22, NEW YORK — Unix Systems Concepts and Facilities. Contact: Women in Data Processing, Inc., Suite 2008, 210 Madison Ave., New York, N.Y. 10017.

SEPTEMBER 22, NEW YORK — CIBC Command-Level Programming I. Contact: Women in Data Processing, Inc., Suite 2008, 210 Madison Ave., New York, N.Y. 10017. Also being held Sept. 28 in New York.

SEPTEMBER 22-23, NEW YORK — CIBC Com-

mand-Level Interactive. Contact: Syzed, Inc., One Park Ave., New York, N.Y. 10016.

WEEK OF SEPT. 23

SEPTEMBER 24, NEW YORK — Displaywriter 2. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

SEPTEMBER 24, NEW YORK — Introduction to Data Communications. Contact: Women in Data Processing, Suite 2008, 210 Madison Ave., New York, N.Y. 10017.

SEPTEMBER 24, NEW YORK — Introduction to the IBM PC. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

SEPTEMBER 24-25, CHICAGO — The First International Conference on Human Factors in the Work Environment and Computer Ergonomics. Contact: Griggin Littlehales, Thomas L. Richmond, Inc., World Conference on Ergonomics, Suite 1800, 1560 Ave. of the Americas, New York, N.Y. 10019.

SEPTEMBER 24-25, ATLANTA — Integrating Voice and Data in the FAX. Contact: Business Communications Review, 950 York Road, Hinesdale, Ill. 60521.

SEPTEMBER 24-25, WASHINGTON, D.C. — The National Conference on Government Regulation of Offshore Money Flow, Electronic Banking and Currency Reporting. Contact: American University, Office of Continuing Education and Conference, 4400 Massachusetts Ave. N.W., Washington, D.C. 20014.

SEPTEMBER 24-25, NEW YORK — Local-Area Network/FAX Evaluation:

A Planning and Decision-Making Perspective. Contact: Data Communications Special Projects Conference Management Center, 445 W. Main St., Wyckoff, N.J. 07481.

SEPTEMBER 24-25, NEW YORK — Local-Area Networks. Contact: Business Communications Review, 950 York Road, Hinesdale, Ill. 60521.

SEPTEMBER 24-25, WASHINGTON, D.C. — Multitasked Telecommunications Services. Contact: Conference Registrar, Phillips Publishing, Inc., Suite 1300N, 7315 Wisconsin Ave., Bethesda, Md. 20814.

SEPTEMBER 24-25, WASHINGTON, D.C. — Digital Networking Technologies, Economics and Opportunities. Contact: Telestrategies, Inc., Suite 102, 6842 Elm St., McLean, Va. 22101.

SEPTEMBER 24-25, WASHINGTON, D.C. — Introduction to Vamm. Contact: Data Base Management, Inc., 1075 Toland Trpk., Manchester, Conn. 06040.

SEPTEMBER 24-25, LOS ANGELES — World Conference on Regressions in Computer Systems. Contact: Robert W. Bailey, Computer Psychology, Inc., P.O. Box 16, 54 E. Main St., Mendham, N.J. 07864. Also being held Sept. 26-28 in Dallas, Sept. 26-27 in Chicago and Sept. 27-28 in New York.

SEPTEMBER 24-25, BOSTON — Optimizing Lease Distances. Contact: Business Communications Review, 950 York Road, Hinesdale, Ill. 60521.

SEPTEMBER 24-25, WASHINGTON, D.C. — Decision Support Systems on Personal Computers. Contact: Control Data Institute for Advanced Technology, 6008 Executive Blvd., Rockville, Md. 20852.

SEPTEMBER 24-25, PHILADELPHIA — Project Management & Control. Contact: Q.E.D. Information Sciences, Inc., P.O. Box 181, 170 Linden St., Weymouth, Mass. 02181.

SEPTEMBER 24-25, LOS ANGELES — Networking Personal Computers. Contact: Data-Tech Institute, P.O. Box 569, 386 Franklin Ave., Nutley, N.J. 07110.

SEPTEMBER 24-25, NEW YORK — Data Communications Network Design and Optimization. Contact: Control Data Institute for Advanced Technology, 6008 Executive Blvd., Rockville, Md. 20852.

SEPTEMBER 24-25, NEW ORLEANS — The Data Entry Management Association (Dema) "Changes/Changes" Conference and Equipment Exposition. Contact: Dema, P.O. Box 16711, Stamford, Conn. 06906.

SEPTEMBER 24-25, CHICAGO — Microcomputer Software Substitution Workshop. Contact: Datapro Re-

search Corp., 1805 Underwood Blvd., Detroit, N.J. 08075.

SEPTEMBER 24-25, HARTFORD, CONN. — New-Generation FAX. Contact: Data-Tech Institute, P.O. Box 569, 386 Franklin Ave., Nutley, N.J. 07110.

SEPTEMBER 24-25, NEW YORK — Data Communications System Components. Contact: Systems Technology Forum, 9000

Fern Park Drive, Burke, Va. 22015.

SEPTEMBER 24-26, ATLANTA — The IBM Personal Computer. Contact: Center for Advanced Professional Education, Suite 110, 1650 E. Gentry St., Santa Ana, Calif. 92706. Also being held Sept. 24-26 in Houston.

SEPTEMBER 24-27, HONG KONG — The Fifth South East Asia Regional

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NEWS

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Computer Conference and Exhibition 1984. Contact: Kristie Swartz, Cahners Exposition Group, P.O. Box 7007, 7316 Wisconsin Ave., Washington, D.C. 20008.

SEPTEMBER 24-27, HOUSTON — Managing with Micros. Contact: The U.S. Professional Development Institute, Managing with Micros, Department

ABCDP, 1690 Elton Road, Silver Spring, Md. 20903.

SEPTEMBER 24-25, NEW YORK — Information Modeling Workshop. Contact: Yourdon, Inc., 1153 Ave. of the Americas, New York, N.Y. 10036.

SEPTEMBER 24-25, HOUSTON — Project Management Control. Contact:

Elise Rahelski, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77062.

SEPTEMBER 24-26, SAN FRANCISCO — Advanced Structured Analysis. Contact:

Yourdon, Inc., 1153 Ave. of the Americas, New York, N.Y. 10036.

SEPTEMBER 24-25, DALLAS — CICS Internal Architecture. Contact:

Sysed, Inc., One Park Ave., New York, N.Y. 10016.

SEPTEMBER 24-25, NEW YORK — Structured Systems Design. Contact: Learmonth & Burchett Management Systems, Inc., Suite

405, 2800 N. Loop W., Houston, Texas 77062.

SEPTEMBER 24-25, WASHINGTON, D.C. —

Structured Design Workshop. Contact: Yourdon, Inc., 1153 Ave. of the Americas, New York, N.Y. 10036. Also being held Sept. 24-25 in Seattle.

SEPTEMBER 25, NEW YORK — Spreadsheets Using Lotus 1-2-3. Contact: Center for Advanced Data Processing, Suite 403, 450 Seventh Ave., New York,

N.Y. 10123.

SEPTEMBER 25, NEW YORK — Introduction to Symphony. Contact: Center for Advanced Data Processing, Suite 403, 450 Seventh Ave., New York, N.Y. 10123.

SEPTEMBER 25, WASHINGTON, D.C. — Stress Detection and System Improvement. Contact: Dunstone Craft, Warfare Corp. of America, 455 Carleia Drive, Herndon, Va. 22070.

SEPTEMBER 25-26, ST. LOUIS — Data Processing Management Association and Association for Systems Management '84 Conference (Datcom '84). Contact: Datcom '84 Registration Committee, P.O. Box 1401, St. Louis, Mo. 63108.

SEPTEMBER 25-27, CARY, N.C. — SAS Applied Time Series Analysis & Forecasting Lecture/Workshop. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

SEPTEMBER 25-27, TORONTO — DOG/VSE Internals, Debugging & Problem Determination. Contact: Goli Systems International, Inc., 5455 N. High St., Columbus, Ohio 43214.

SEPTEMBER 25-27, WASHINGTON, D.C. — SAS Basic for Mainframes Course. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

SEPTEMBER 25-28, SAN DIEGO — Data Communications. Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

SEPTEMBER 25-28, DALLAS — Structured Programming. Contact: G.E.D. Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

SEPTEMBER 25-28, BOSTON — Distributed Processing: Mini and Microcomputer Implementations. Contact: Ruth Dordick, Integrated Computer Systems, Inc., 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

SEPTEMBER 25-28, ST. LOUIS — Effective Communications. Contact: Center for the Study of Data Processing, Campus Box 1141, Washington University, St. Louis, Mo. 63130.

SEPTEMBER 25-26, WASHINGTON, D.C. — SAS Processing Course. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

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EDITORIAL

Hardware dynamics: A look back

That the computer business is perhaps the most dynamic sector of the world economy should not come as a surprise to any data processing manager.

In few places will this dynamism be shown more graphically than in *Computerworld's* annual Hardware Roundup, the third and final installment of which appears in today's issue beginning on page 52. A look back over the past four years' worth of roundups is most provocative, even more so when one considers that the rate of change in many areas of the computer industry is, if anything, accelerating. Consider the following:

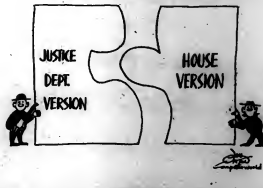
■ **Price per megabyte.** Across the entire range of mainframes and superminis featured in the roundup, the price per megabyte of core memory has dropped precipitously in the past four years, averaging greater than 50% for most systems, regardless of manufacturer. In some cases, the change has been nothing short of radical: The price per megabyte of IBM's System/36 hovered in the \$90,000 range in 1981, compared with \$7,500 in our recent survey. In the past four years, cycle time, too, has dropped about 50% for high-end machines to the 24-nsec range.

■ **Mips ratings.** Today's boxes are packing a lot more horsepower, and this is another performance category threatening to grow exponentially with rapid advances in chip-packaging technology. In 1981, most mainframes boasted top-end machines rating in the 9 to 12 millions of instructions per second range. Today, that range has tripled at the high end to the 26- to 30-Mips range, with most hardware watchers expecting a new generation of 60-Mips machines to be announced within 18 months. In the past four years, cycle time, too, has dropped about 50% for high-end machines to the 24-nsec range.

■ **Whether the IBM compatibles.** With the exception of machines made by Amdahl Corp., most many plug-compatible mainframes are made in the U.S. anymore, compared with four years ago. Magnuson Computer Systems, Inc. doesn't exist, having been bought up by Global-Ultimate Systems, Inc.; National Advanced Systems Corp. machines are all Japanese-made; and even Amdahl is selling increasingly more Fujitsu Ltd.-made products, while cramming its own mainframes with Japanese-made boards. IFL Systems, Inc. hasn't turned a profit in several quarters and is generally doing quite poorly in the market. Camsco Corp. hasn't done much to improve its 1600 line in years. Control Data Corp. has stopped marketing its Omega line of plug compatibles since 1981.

■ **Lines of distinction have blurred.** It was easier four years ago to classify machines as mainframes, minis, superminis or micros. Not so today. The computing power of the low-end minis of 1981 has been surpassed by the 32-bit superminis, while the power and price/performance of many low-end mainframes has been bested by the current generation of superminis. More than ever, data processing managers must buy according to their specific needs, rather than relying on any specific class of machines to solve their problems.

COMPUTER CRIME BILLS



E. Douglas Urwin?

LETTER

Is there life beyond Pick?

I am always amazed when I read articles about relational data base management systems like Ingres from Relational Technology, Inc. and Oracle from Oracle Corp. (KW, Aug. 6). Pick & Associates, Inc.'s Pick operating system on Microdata Corp. computers is by far the most powerful and efficient fully relational system there is.

As DP manager in a small company using a VAX-11/750 VMS with 2M bytes of memory and Oracle, I estimate that my department would be three to five times more productive and would save \$25,000 in vendor costs per year if it was using a Microdata Sequel with 1M byte of memory.

Pick integrates the DBMS with the operating system (largely implemented in firmware), in contrast to the Oracle product, which is layered onto VMS with a resultant compounding of technical

system considerations and administrative overhead. A 300-line program in Microdata's Data/Basic gets direct access to items and attributes, instead of a 1,700-line Cobol program with awkward subroutines calls to the Oracle data base. The concept of sequential files does not exist in Pick. Files and items are accessed directly and sized dynamically. Items and attributes are truly variable-length, and attributes may be multivalued in two dimensions, reducing the necessity for indexes.

Disk storage is much more efficient, so less capacity is needed on a Microdata than on a VAX. Microdata system management is elegant in its simplicity.

If a small to medium-size business needs a relational DBMS, why would it consider anything other than Pick?

David H. Stewart
Kent, Ohio

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VIEWPOINT

Contingency testing leaves no guesswork



THE DATA
COMMUNICATIONS
JOHN P. MURPHY

An operational information processing contingency plan must be considered critical to any installation. Until that testing is carried out, there is no way of knowing anything factual about the adequacy of the plan. The plan may appear perfect on paper, but until you actually go out to the backup site and try to make everything work, you can only hope all will go well in an actual emergency.

The first test will not, in all likelihood, go well. That is, after all, why the test is carried out — to discern what is not correct and to make the required adjustments to the plan. We at Rayovac Corp. have carried out this test on an annual basis for the last three years at our off-site backup data center outside Chicago.

I must admit that the first test was something less than a success. We were able to bring up our operating system, but we never did get any of the production run. However, we were able to come away with enough experience to know that, if we had to go back in a disaster situation, we could get the production systems operational.

Second test

The second year, we were able to bring up the operating system and do the production runs we had scheduled. However, the backup site did not have a full communications package available at that time, and we were not ready to test the data base off-site.

This year, the complete test of all aspects of the data center went very well; we came away from the backup with an assurance that we have achieved complete success with our testing effort.

Murphy is director of management information services for Rayovac Corp., Madison, Wis., and author of Management Information Systems as a Corporate Resource, published by Dow Jones-Irwin.

We were able to bring up the operating system and the data base management system; we were able to process all but one of the production runs we have selected for the test (we overlooked one tape for the production run and left it at the home site); and we were able to establish our communications network from the backup site to our remote location.

The development and logistics of the off-site contingency plan need to be done on a phased basis. There are many details to attend to in a test of this nature, and considerable coordination is needed; so don't allow the planning to be done in haste and expect all to go well — because it won't.

tions and successfully transmit orders. Persistence does pay off.

This did indeed require more test time than we had anticipated; in fact, it took about 25% more time than we had estimated. We had not a contingency of 30% more time than we had estimated for the test, so even though we went over estimate, we did have sufficient time to complete everything that was planned.

The development and logistics of the off-site contingency plan need to be done on a phased basis. That planning should be done well in advance of the actual test date to ensure that everything can be done in an orderly fashion. There are many details to attend to in a test of this nature, and considerable coordination is needed; so don't allow the planning to be done in haste and expect all to go well — because it won't.

The person in the information processing de-

partment with responsibility for security should be the person to lead the off-site test. This person should function as the central point and must also have the requisite authority to make it all work. If the responsibility for the project is not clear and the authority unrecognized, it is unlikely the test will go well.

Duplicate systems

Those systems selected for the production testing portion of the test should be duplicates of recently processed operational applications systems. The same input to those original runs should, of course, be the input to the test production runs. By using an exact duplicate of the production processing runs, you can check out all totals and reports to make certain that all did go as it should have during the test.

The test will provide an opportunity to allow people to make different runs. For example, the software people should attempt, using the documentation, to work in areas where their experience may be limited. The CICS expert might bring up the data base management systems, and the data base specialist might bring up the operating system and VS, as examples. Operations supervisors, again working from the contingency documentation, should attempt to do the operating.

In all cases, of course, experienced people need to be standing by in case too much difficulty is encountered. This is a practical exercise, even though it does require additional planning and work. After all, no one can say who will be available should a disaster strike. The more everyone is prepared to assume different responsibility, the better for all concerned.

Conducting a full-scale test of the information processing contingency plan is a time-consuming task. Given all the other pressure and concerns found in the typical information processing department, it can become very easy to put off the test. Because of the absolute requirement to protect the interests of the organization, testing of the plan on a regular basis must be given a high priority. It does take time and effort to conduct the test, but it must be carried out.

AT&T vs. IBM: Battle of the boardrooms



IBM
COMMUNICATIONS
JACK STONE

It seems like only a few months ago that, in a small village just a few dozen miles southwest of the Empire State Building, AT&T magazines from the four corners of the republic gathered together for final decisions on the technology direction of its Personal Computer 5300 product line. I wasn't there, you understand, but I have it from a reliable insider that the meeting proceeded in this manner, more or less . . .

A gavel sounded, and the chairman began the meeting. "Hi there, gang. As you know, we are meeting here to announce the design for our new Personal Computer line."

"(Gasp!) and hollers!" and stomps of boots proceeded for several minutes before he could continue.)

"Now, the boys over at the lab have worked many long months coming up with the specs for this machine, one that will show the business world our corporate commitment to technology."

Stone is an independent management consultant, educator and writer, specializing in DP business communications and personnel development, based in Washington, D.C.

leadership in the communications-based data processing industry."

"(Telpie!) and shoutin' until the gavel finally quieted the tumultuous carry-on.)"

"So, here's the news you've been waiting for. The machine uses the Intel Corp. 8086 chip and sports a high-resolution display of 640 by 400 pixels. Standard are the seven expansion slots plus the serial and parallel ports. A basic configuration would include 128K bytes of random-access memory, dual 300K-byte disk drives and the operating system. Not only that, but rather than waste the precious resources of Western Electric on the project, we are farming out production to our brethren in New York, how d'ya like them apples?"

(From the assembly, in unison.)

"Intel 8086? The pixels and the slots? That's IBM compatible! And manufactured in ITALY!"

Global strategy

"Well, now, I rather expected a ring-a-ding dance around the table, but I sense a slight bit of disappointment. Let me explain our global strategy."

"You see, one of the ways of evidencing leadership is doing the ungrateful — you know, keeping the competition off-balance. We have reason to believe that IBM was gearing its 20-year plans on the assumption we were going to bring out a brand new machine. With this announcement, we're going to leave them into a dither. Besides, a slice of the IBM Personal Computer pie ain't all that bad to

stomach."

It's hard to believe, but it was just a short while ago when, in a little town perhaps 30 miles northwest of the Empire State Building, the top brass of IBM assembled from the eight regions of the world to ponder the ultimate selection of the technology orientation of its new Personal Computer product line. I wasn't invited, you know, but I have it from an impeccable source that the get-together went along in this way, more or less . . .

A gavel sounded, and the chairman began the meeting. "Good day, ladies and gentlemen. As you know, we are meeting here to finalize the design for the new Personal Computer."

(A round of modest hand-clapping.)

"Now, our staff at the research laboratories has worked many long months coming up with the specs for this machine, one that will show the business world our corporate commitment to technology leadership in the data-processing-based communications industry."

(Another round of the same.)

"So, here's the news you've been waiting for. The machine uses the Intel 8086 chip and is, therefore, two or three times faster than our standard Personal Computer. A major advance is its ability to support up to three users with our advanced Unix — oops, sorry, misread it — make that Xenix — operating system. And we have drawn the basic specs for the machine, the IBM Personal Computer ATAT — oops, sorry, misread it — make that AT, will you please?"

VIEWPOINT

Grappling with 'innocent' computer crime



READER'S
PLATFORM
Vic Swan

Computer data is private property. Gaining access to it through unauthorized snooping — even if there's no intent to use, abuse or alter that information — is morally wrong and potentially damaging.

Some hackers have led much of society to see the issue differently. Some claim that computer data is not

private property, and others simply say that since they intend no harm, they are committing no crime. This rationalization has found unwitting support among the public and media, who have glorified naive criminals as cute pranksters. And prosecutors, who have legal ammunition to pursue cases of maliciously committed access, have often found themselves powerless to react to nonmalicious computer snooping.

The leaders in computer development and application are in the best position to encourage appropriate action.

A three-front assault is needed to solve the problem of unauthorized data bank entry: using our visibility

to create better public awareness of the problem's potential for damage; applying our knowledge to help lawmakers and enforcement agencies deal with the situation effectively and realistically; and improving computer security. Society requires a stronger protection for its computerized information, and we have a responsibility to help achieve it.

The media and the public must be made to see people who attempt unauthorized entry as the troublemakers that they are. From that will come the social and peer influence that will discourage this behavior by young computer buffs.

This could be accomplished by using our visibility to communicate the

true costs of unauthorized entry. The public does not always respond strongly to stories of snooping in corporate records or other examples of crimes against private enterprise, but the risks of damage done by unauthorized entry into more dramatically critical records could strike the necessary responsive chords.

We should also encourage and assist in the development of tough, fair and definitive laws on computer crime — including those dealing with simple unauthorized access. About half the states now have some form of such legislation, but in many cases, it is weak, vaguely defined or fails to establish verifiable distinctions between malicious and nonmalicious entry.

Of those states without access laws, some are already developing them, and others have yet to give official recognition to the problem. The issue of unauthorized access committed across state lines — which places the offense in the federal arena — has yet to be settled.

True, many unauthorized entry cases have been simple youthful mischief. That's always been with us — the computer is just a new way to perform it. The fact these kids are getting away with it simply shows some of the growing pains that are part of society's struggle toward computer literacy.

More at stake

However, we have more at stake in the abuse of computer access than we did when youthful pranks resulted in overturned outhouses. The creation of sensitive laws with real teeth — along with public education about those laws through the mass media and computer press — is obviously needed to deter some hobbyists from acting irresponsibly.

California currently defines unauthorized computer entry as a felony, which effectively fails to deter nonmalicious entry by preventing prosecution of cases in which felonious intent cannot be proved.

Proposed changes to California law provide for misdemeanor prosecution of simple nonmalicious entry — the kind most often performed as a lark by naive hobbyists. The legislation continues the felony statute protection against malicious entry and also creates the option of filing fraud charges against those who change computer programs intentionally. The bill may also be amended with a provision that covers those who give access codes to unauthorized users.

It is important for us to remember that none of this excuses us from the need to be constantly aware of security needs. There are ways to protect sensitive computer files from unauthorized access, and use of these tools should be as automatic as locking the door after business hours. Sound business practice demands it, and the persons the data involves have a right to the privacy and safety it provides.

It is up to our industry to help society, business and government recognize the situation for what it is and deal with it effectively. Unauthorized computer access may seem cute or amusing to some, but it is a very real problem with a high potential price. Our participation can help prevent anyone from having to pay it. □

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SOFTWARE & SERVICES



Micros, factory lead M&D plans

In his opening speech at McCormack & Dodge Corp.'s (M&D) Seventh Annual User Conference held in Washington, D.C. recently, M&D President Frank Dodge set the tone for what was at times a euphoric gathering.

"We are aiming for a growth rate of more than 50% in 1984 and 1985," Dodge said. "By 1990, M&D is expected to have more than 10 times its current employee level and planned revenue." Wrapping up his speech, Dodge stated, "I believe M&D is headed toward being the No. 1 software company in the world."

Those are unusually rosy goals considering the doldrums the mainframe software industry has been in. But M&D maintains it has good reason for such optimism. One factor, no doubt, is the migraine headaches currently being experienced by M&D's chief competitor Management Science America, Inc. (MSA). Dodge, while not mentioning MSA by name, could not resist reading a scathing levelment prospectus about his arch rival during his kickoff speech.

Setting its future

But more significantly, M&D is betting its future on two new technologies which have proved very lucrative so far: PC Link and Millennium.

Millennium is an on-line development and customization technology under which all systems share common functions (CW, Aug. 27). The advantage of Millennium to M&D and its customers is that the company claims it can acquire a package, strip it of its on-line features and rewrite the on-line portion in Millennium while retaining the batch routines. The package can be shipped out to customer sites while M&D rewrites the entire package in Millennium for shipment as a later release.

See 90085 page 62

The service bureau route: Is it for you?

By Douglas Donath
Special to CW

No matter how big your company, chances are a service bureau can help you do your business more efficiently. But is an in-house computer really the best answer to your needs?

For small companies with needs confined to simple word processing or accounting, mini and microcomputers usually provide satisfactory performance. However, when requirements become more complex, mainframes may be necessary. At this point, it is essential to consider not only the price of the computer itself, but also the attendant costs that go along with this kind of operation. These include space requirements, support staff needs

and the cost of electrical power and air conditioning.

If these expenses are overly burdensome, an alternative is service bureau. Whether to go in-house or with a service bureau depends on your company's size, requirements and data processing budget.

Service bureaus offer numerous benefits. These include:

■ **No hardware costs.** When you work with a service bureau, you are merely renting time on its computer. This helps to keep your overhead costs low.

■ **No support staff.** All programming, operations and maintenance is handled by the service bureau's own personnel. Since good DP professionals tend to command salaries from \$27,000 per year on up, are highly transitory and require managers with good technical skills, many small firms cannot afford to hire them in-house.

■ **Greater power.** Most service bureau systems are designed to be used by multiple clients simultaneously. Therefore, you

See 08675 page 60

Donath is vice-president of Creative Computer Resources, Inc., a Costa Mesa, Calif.-based software developer and service bureau that specializes in the IBM System/38.

On-line maintenance: a new ball game



SOFTWARE
By William Immon

It is generally agreed that system maintenance in the batch environment comes in three forms:

■ **"Fix it" maintenance,** for immediate problems that stop a system from operating.

■ **System modifications,** for changes to a system that is otherwise operational.

■ **System additions for new functions** to be added to existing systems.

While there may be a gray area be-

tween the last two classifications, most system maintenance, at least in the batch environment, can be nicely divided along these three lines.

But there is another category of maintenance that is appropriate in the on-line environment. It is the criteria of post implementation design and development. Post implementation design and development becomes most obvious when comparing the resources used in maintenance for batch with those for on-line environments.

B. Burton Swanson and Bennett Lients report a fairly constant 50% ratio of maintenance vs. new development in their book *Software Maintenance Management* (Addison-Wesley Publishing Co.), which applies almost exclusively to the non-on-line environment.

But T. Capers Jones III of Nolan, Norline & Co. reports maintenance ratios as high as 85% in other environments, in-

See 84704 page 63

Immon is a director at Coopers & Lybrand in Denver, a noted auditor on the subject of data base design and a regular contributor to Software.

■ **Look and learn.** Timespace, Inc. announced an on-line data base with information on more than 100,000 seminars, courses and continuing education programs. 4/88

■ **It came from IBM.** Big Blue unwrapped Release 4 of its VS Fortran for mainframes. 4/88

■ **Present and accounted for.** National Information Systems, Inc. released a modular accounting package for Digital Equipment Corp. machines. 4/88

■ **Thinking of linking?** Burroughs Corp.'s Host-Link is said to provide an environment for integrating multiple micro workstations with a host mainframe. 4/87

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SOFTWARE & SERVICES

Release 4 of 'VS Fortran' debuts

RYE BROOK, N.Y. — IBM has announced Release 4 of VS Fortran for its mainframe processors. The release implements the automatic precision increase option, compiler-generated restraint object code, support for IBM Vasm key-sequenced data sets, a run-time load capability for certain library routines, new and improved compile-time options and compiler and library performance enhancements, IBM said.

On request, the compiler automatically increases the precision of real data. For example, it can expand 64-bit words to 128 bits. The feature is said to reduce the effort required to bring Fortran programs from non-IBM machines to IBM processors.

The new release also allows users to access information directly by keyed data as well as sequentially or by record number. Multiple users can share a program in memory without having to load multiple copies of the same program in each user's virtual storage, a spokesman said.

VS Fortran optionally generates restraint object code in the IBM MVS or VM environment, optionally loads

most library modules at execution time and allows most library routines to reside above the 16M-byte line on MVS/XA.

Performance enhancements include new compiler options, a compiler listing output enhancement, in-line code generation for character assignments and comparisons, out-of-line parameter lists for library I/O requests and debugging information added to execution-time messages.

The initial license charge for compiler and library is \$660, with a monthly charge of \$235.

Information is available from IBM's National Accounts Division, which is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

DEC minis get accounting package

CUPERTINO, Calif. — National Information Systems, Inc. has announced a modular accounting package for Digital Equipment Corp. VAX-11 superminicomputers under DEC's VMS operating system and DEC PDP-11 minicomputers under DEC's RSTS operating system.

According to the company, each of the seven software modules for general ledger, accounts payable, accounts receivable, order entry, payroll, job costing and inventory control have simultaneous update capabilities and can generate reports up to 182 char. wide on DEC VT100 or compatible terminals and printers.

The modules are all interactive with password protection and a wild-

card reporting function. Their restart feature preserves data in a posting session in the event of a system crash.

A user-defined forms printing capability allows users to set up tables to define print areas on preprinted forms.

Installation of a module, including tailoring and system manager training, reportedly can be completed in one day.

Cost of a perpetual license ranges from \$2,500 to \$4,000, depending on hardware and modules used, the vendor said.

National Information Systems is located at Suite 130, 30570 Town Center Lane, Cupertino, Calif. 95014.

Firm offers on-line list of seminars

WALTHAM, Mass. — Timeplace, Inc. has announced an on-line data base that the company said provides information on more than 100,000 seminars, courses and continuing education programs being conducted nationwide.

Called Edvent, the service is oriented toward human resource departments and training managers and is available through dial-up access over the Boeing Computer Services Co. network, the vendor said. Users can search the data base by multiple keywords, including subject, time, city, state, site and sponsor. Timeplace guarantees response times of a few seconds.

Edvent returns a listing of courses that meet the user-defined criteria. Information includes course description, cost, dates, duration, instructors, sponsor contacts and prerequisites. The user may narrow down the list by entering additional keywords and can print out a list of available courses.

Extensive Help screens and examples are provided, the vendor said. From 10 to 20 keywords are typically used to index available courses. Beginning early next year, Timeplace will also offer electronic requests for information and electronic registration.

The service can also be used by hotels and conference halls to attract sponsors and by course sponsors to identify potential scheduling conflicts, Timeplace said.

An annual subscription fee costs \$750. Connect charges are \$48/hour through the Boeing Computer Services network.

Additional information is available from Timeplace, which is located at 460 Totten Pond Road, Waltham, Mass. 02154.

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SOFTWARE & SERVICES

Burroughs offers micro-CPU link

DETROIT — Burroughs Corp. has announced a communications link that reportedly provides an environment to integrating multiple micro-computer workstations with a host mainframe.

Called Host-Link, the software offers extended disk storage capacity, the ability to share host and networked peripheral devices, host-workstation file transfer, transparent data sharing, interprogram communications and security.

Host-Link connects Burroughs ET 3000 workstations with the company's A 9, B7000, B6000, D6000 and B1000 mainframes. The capability will be available on Burroughs B4000, B8000 and B9000 systems in

the fourth quarter.

Host-Link enables the ET 3000 to use up to nine virtual disk drives on the host. Virtual disks can also be shared by authorized users, the company said. Output from any workstation can be routed to any peripherals on the network.

Data, source and object files can be transferred between micros and the host in a manner that is transparent to applications, Burroughs said. Host-Link ranges in price from \$186/mo for a Burroughs B1000 to \$490/mo for a Burroughs B7000. There is a \$105 one-time charge per workstation.

Burroughs is located at 1 Burroughs Place, Detroit, Mich. 48233.

SYSTEMS SOFTWARE

GOAL SYSTEMS INTERNATIONAL, INC.
FDSMAN/XP Release 6.0

Goal Systems International, Inc. has announced the unbundling of its FDSMAN/XP software, which addresses problems associated with accessing, updating and adapting partitioned data sets in IBM's VSI, MVS and MVS/ESA installations.

Release 6.0 introduces a library search facility called Program Patch Optimization (PPO) that works in conjunction with FDSMAN/XP's existing Dynamic BLDL facility. The Dynamic BLDL creates and maintains a table of directory accesses of the most commonly used system link list programs.

The PPO facility intercepts directory access to subdirectories in libraries, thereby forcing the link path area (LPA) to be searched first for requested programs. Goal said. If the LPA cannot satisfy the request, then FDSMAN/XP's Dynamic BLDL table is searched for the requested program.

If the program is not in the Dynamic BLDL table, the Jolly/Bugfix library directory will be searched. Together, the Dynamic BLDL and PPO facilities eliminate unnecessary library directory searching to reduce response time for IBM's TSO and for CPU utilization, according to the vendor.

Release 6.0's five modules can be purchased separately or as one product. The price of any single module is \$4,480 or \$112 per month on a three-year renewable license. Incremental feature agreements are also available.

Goal Systems International, 5405 N. High St., Columbus, Ohio 43214.

OXFORD SOFTWARE CORP.
PCComFrame edition

Oxford Software Corp. has enhanced PCComFrame, a data transfer system between IBM mainframes and various personal computers.

Enhancements include exits that allow a user to access IBM CDS data by using program exits, to reformat Basic, Fixed and Data Interchange Format files; and to interface to Oxford's Maxcalc, a mainframe spreadsheet program. Enhanced security features reportedly protect fields in each file.

Foreign character sets now include English, French, German, Swedish, Italian and Dutch.

For \$9,000, an installation receives eight personal computer licenses and IBM DOS mainframe software. Licenses are also available for IBM's OS.

Additional personal computers can be added at a cost of \$950 each.

Oxford Software, 174 Boulevard, Hightstown, N.J. 08520.

BOOLE & BABBAGE, INC.
CMF Enhancement

Boole & Babbage, Inc. has announced additional features and capabilities for its CMF/Performance Data Base (CMF/PDB), CMF/Model and CMF/Workload Planner (CMF/WP), all of which are components of Boole & Babbage's Capacity Management Facilities.

According to a spokesman for the company, CMF is management software designed to assist data center managers in planning and controlling computer work loads, service and resources.

Each CMF component is available as a stand-alone product, but is fully integrated to offer a capacity planning system for the IBM MVS environment, according to the vendor spokesman.

Support for IBM's MVS/ESA is now provided. Included in each component is the CMF/Workbench, which serves as the liaison between the user and the architecture.

The CMF/PDB is licensed at \$30,000 for the first CMF/Model and CMF/WP are priced at \$30,000 and \$15,000, respectively.

Boole & Babbage, World Headquarters, 510 Oakland Plaza, San Jose, Calif. 94068.

See 60PT page 31



full of specialists from over 150 nationwide service centers to provide upgrade assistance, on-going support and service follow-up.

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of the vision which has allowed them to recognize both the challenge and the opportunity inherent in an emerging Information Age: to create portable software products that deliver productivity improvements for software development and decision making processes in an increasingly distributed computing environment.

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SOFTWARE & SERVICES

SOFT

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RELATED COMPUTER TECHNOLOGY, INC.

MAD/3000 Program Library

Related Computer Technology, Inc. has released an enhanced version of its MAD/3000 multilingual automatic compiler for Hewlett-Packard Co. HP 3000 series microcomputers.

A new Program Library feature reportedly maintains current information of all programs in the system, including all data elements used. According to the company, the cross-reference of data may be viewed directly

at the terminal or may be supplied in a hard-copy reference.

The updated version of the MAD system costs \$5,000.

Related Computer Technology, P.O. Box 583, 154 S. Main St., Keller, Texas 76248.

PRODUCTIVITY AIDS

INFO TECH, INC.

D6/Software

Info Tech, Inc. has announced D6/Software, a set of four products that serve

as bridges to SAS Institute, Inc.'s SAS product and provide the SAS system with fourth-generation capabilities. D6/Software operates on IBM's OS/MVS and VM/CMS operating systems and on Digital Equipment Corp.'s VAX-11/VMS systems.

D6/Software reportedly simplifies SAS programming, linking nontechnical staff members to their own SAS applications, and creates a direct-access capability to SAS data sets, allowing users to reduce their use of computer resources.

D6/Software's four packages are: D6/DATA, D6/DB, D6/DB and D6/QL. D6/GEN reportedly is a dictionary-driven systems generator that supports prototyping. D6/DB is an interactive database manager with full screen menus and predefined analysis functions. D6/DB is an indexed, direct-access facility for SAS data sets. D6/QL is a relational query language that reportedly reduces the complexity of SAS programs that retrieve data.

Until Sept. 15, either D6/DB or D6/QL, but not both, can be purchased for \$650. Both are offered in a package for \$4,500. The products are otherwise priced as follows: D6/DB, \$11,000; D6/DB, \$9,500; D6/DB, \$3,000; D6/QL, \$4,000; D6/DB and D6/QL, \$6,500; D6/DB, D6/QL and D6/DM, \$15,000; or all four products, \$29,000.

Info Tech, 5700 N.W. 24 St., Gainesville, Fla. 32604.

CALIFORNIA SOFTWARE, INC.

Netman/Natural

California Software, Inc. and Software AG of North America, Inc. have announced an agreement whereby California Software will offer an on-line query and reporting system based on Software AG's Natural/Yesm, a fourth-generation language used to develop applications. Netman/Natural runs on IBM's 30 series and 4300 series computers under the DOS and MVS operating systems.

Marketed as an option to Netman, a data center management application from California Software, the Netman/Natural facility will provide users with on-line inquiry and reporting capabilities via a menu-driven system. It will also allow users to develop extensions to the standard Netman product to respond to their specific organizational needs, according to the vendor.

The price of Netman/Natural is under \$30,000 in an introductory offer.

California Software, 3832 Norwalk Ave., Santa Monica, Calif. 90404.

SBS SUNDATA

Postform Release 3.3

SBS Sundata, formerly Sun

Information Services Co., has announced Release 3.3 of its Postform proprietary on-line data entry system for use under IBM's TSO and VM/CMS operating systems.

According to a spokesman, the enhanced release includes two added operating features: chaining of different forms throughout data entry, editing or retrieval mode; and field verification through automatic value comparison of original and rekeyed data.

Postform is said to allow users to create input forms specifically designed for their applications on an IBM 3270-type CRT terminal.

The product is composed of three components — Postform, Formfill and Formedit. These components permit functions such as data entry, validation, editing, updating and retrieving, according to the spokesman.

Postform is priced at \$11,000, which includes one year of maintenance, training and documentation, the spokesman said.

SBS Sundata, Glenhurst Corporate Center, 1865 Drummer Lane, Wayne, Pa. 19087.

APPLICATION PACKAGES

COLLIER-JACKSON, INC.

CJ/Report Writer for VAX-11

Collier-Jackson, Inc. has introduced an interactive report writer for its payroll and personnel systems running on Digital Equipment Corp.'s VAX-11 family of superminicomputers.

CJ/Report Writer is for use with Collier-Jackson's CJ/Business Information

Systems.

With CJ/Report Writer, an authorized user can select the information desired, determine the order/format, and generate on-line or printed reports. No instruction manual is necessary for operation, according to the vendor.

CJ/Report Writer is priced at \$3,500 per system or \$7,500 for use with all systems, including the maintenance software for defining additional data dictionaries, a spokesman said.

Collier-Jackson, 3707 W. Cherry St., Tampa, Fla. 33607.

TEKTRONIX, INC.

SA Tools

Tektronix, Inc. has announced a set of automated structured analysis tools for its line of design automation products.

The Structured Analysis Tools (SA Tools) provide front-end system and software requirements definition through graphics editing, error checking, error correcting and data output techniques, according to the vendor.

SA Tools runs on both the Tektronix 6560 microcomputer development system and the Digital Equipment Corp. VAX-11.

The graphics editor tool is compatible with Tektronix's 4100 series with Colorkey as well as with 4110 series color terminals. Hard-copy output is compatible with the Tektronix 4606 color copier and Tektronix printers and plotters.

SA Tools is priced at \$9,600.

Tektronix, P.O. Box 500, Beaverton, Ore. 97077.

See ADP page 52

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SOFTWARE & SERVICES

AIDS from page 51

AMERICAN SOFTWARE, INC.
Inventory Management Systems Version 11

American Software, Inc. has announced its Inventory Management Systems Version 11 Release 2.

Data base versions of the system can be provided in native code for data base environments running under IBM's VSAM, CICS and IMS; Collinet Software, Inc.'s IDMS; Software AG of North America, Inc.'s Adabas; and Applied Data Research, Inc.'s Datadom.

Features include additional report format controls and unit of measure conversions, computational options and additional security to control on-line access to data in any particular record.

Prices of the data base range from \$18,000 to \$44,000.

American Software, 443 E. Paces Ferry Road, Atlanta, Ga. 30305.

LIST PROCESSING CO.
PC3605 Audit Trail Report

List Processing Co. has added a PC3602 Audit Trail Report to ZAP-9, its nine-digit Zip code attachment system.

According to the company, the PC3602 Audit Trail Report lets users meet the U.S. Postal Service reporting requirements for ZIP+4 mailing mail, or mail that

contains pieces with both nine- and five-digit codes.

The report shows the number of mailing pieces within a Zip code that qualify at each discount rate. Totals are listed by sectional center facility within each discount rate, and final totals are printed on the last page of the report.

ZAP-9 is available under a perpetual license for \$24,900. A regional copy, which includes the data base for up to five states, is \$14,900.

List Processing, 555 W. W. Edwards, Lombard, Ill. 60148.

CONVEY COMPANIES, INC.
Impacts Release 2.1

Convey Companies, Inc. has introduced Release 2.1 of its mortgage loan closing, secondary marketing and document printing application package called Impacts.

Release 2.1 of Impacts reportedly automates the following functions: tracking of secondary market commitments and adjustable rate mortgages.

It also reportedly offers enhanced operator feed-through, increased transaction throughput and the capacity for on-line Impacts modification. It is said to support IBM, NEC America, Inc. and other stand-alone printers.

Impacts runs on the IBM 370, 4300 and 90 series mainframe computers. It carries a one-time license fee of

\$40,000.

Convey Companies, Suite 905, One First National Plaza, Dayton, Ohio 45402.

FWM DIGITECH, INC.
Menutech

FWM Digitech, Inc. has released Menutech, a security, system accounting and menu management software package for use on all Wang Laboratories, Inc. VS series computers.

Menutech provides security on system, workstation and program levels. The menu manager is driven by a single program so that menus are created at execution time, not requiring any source code or modifications to existing applications.

Menutech is priced at \$6,000, with a maintenance/support contract available for \$600/year.

FWM Digitech, 408 Seventh Ave., New York, N.Y. 10018.

MARKETING INFORMATION SYSTEMS
MSM/38

Marketing Information Systems has released a version of its Marketing and Sales Management (MSM) system for the IBM System/38.

The package creates a marketing data base of qualified prospects and customers, segmented by user-defined codes. Several routines are built in for inquiry handling, telemarketing, call re-

port generation, sample/quote tracking and direct mail/target marketing.

MSM/38 is priced at \$10,000, which includes on-site implementation assistance and one year of maintenance.

Marketing Information Systems, 2442 Irving Park Road, Chicago, Ill. 60618.

COOPERS & LYBRAND
Exhibitmaker

Coopers & Lybrand has announced a software package to assist insurance company executives and risk managers in assessing the adequacy of their loss reserves.

It can run on IBM Personal Computers and compatibles.

Exhibitmaker consists of three sections. The data-input capability allows for up to 18 types of information and can group data according to company needs. Output exhibits provide information on development factors, frequency and severity ratios and percentage changes. Loss-projection methods are based on incurred and paid losses, claim counts and averages, allocated loss expenses and premium/incurred but not reported relationships.

It costs \$5,000 and includes a user's manual and demonstration diskette.

Coopers & Lybrand, 1851 Ave. of the Americas, New York, N.Y. 10060.

See PAGE 65 page 53

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AT&T

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Grayhill's 80386 PIC Control Industry

The 80386 PIC is a microcontroller in one package. It features a built-in 80386 microprocessor, 32Kbytes of on-chip ROM, and 1Kbytes of on-chip RAM. It also features a built-in 80387 floating-point coprocessor and a built-in 80386 bus controller.

The 80386 PIC can be connected to a microcontroller or a microprocessor. It can also be connected to a microcontroller or a microprocessor via a bus controller or a bus controller.



SOFTWARE & SERVICES

PACKAGES from page 52CONVEY COMPANIES, INC.
Arms Version 2.0

Convey Companies, Inc. has announced Version 2.0 of its Automated Records Management System (Arms) for use with IBM 370, 4300 and 30 series processors.

According to a spokesman, Version 2.0 of Arms offers enhanced control at the document, file folder and carton levels, legal case referencing and control, unlimited microfilm indexing, corporate library referencing, additional batch reporting capabilities, on-line inquiry to batch reports and on-line Arms modification and implementation.

IBM's CICS and Vsam are required to use Arms, which is available for a one-time license fee of \$25,000.

Convey Companies, Suite 905, One First National Plaza, Dayton, Ohio 45402.

META SOFTWARE, INC.
DBG

Meta Software, Inc. has announced a Diagnostic Related Groupings (DRG) system for hospitals. The DRG system consists of four modules and is available for IBM 4300 series and 30 series computers running under IBM's OS or DOS operating systems. DRG works in conjunction with Meta's Medical Record Abstracting System.

The DRG Group module aids the reimbursement process, according to the vendor. The Reanalyzer module helps the hospital make sure that it is receiving the maximum reimbursement possible, and the DRG Optimizer module kicks out cases with a second diagnosis that has a higher relative value under the DRG payment system.

Prices for these modules are \$5,000 for the DRG Grouper, \$3,000 for the Reanalyzer, \$15,000 for the Ad Hoc Report Generator and \$5,000 for the DRG Optimizer.

Meta Software, 1680 Broadway, New York, N.Y. 10013.

CYTROL, INC.
Figuration

Cytrol, Inc. has announced a Cobol program that computes money, yield, time and price figures required by brokerage houses, banks and other financial institutions to trade, settle and value securities. Figuration Securities Calculation software operates on IBM 370, 30 series, 4300 series or compatible processors running with IBM OS or DOS operating systems with Vsam files.

Figuration can be licensed to support one or more of the following securities groups: money markets (short term) for \$30,000, mortgage-backed at \$32,500, taxables (long term) for \$53,500 and tax advantaged (municipals) at \$45,000. A license to include all groups is available for \$112,000.

Cytrol, 4630 W. 77th St., Edina, Minn. 55435.

SERVICE INFORMATION
SYSTEMS, INC.
Fund Raising Version 2

Service Information Systems, Inc. (SIS) has announced enhancements to its Fund Raising package. The Digital Equipment Corp. VAX-11 Cobol-

based system is now available on all DEC VAX-11 systems and supports DEC's VT200 series terminals. Also supported is a link with DEC's Rainbow, Decmate II and Professional-350 computers that allows down-line loading of data base information for stand-alone processing, SIS said.

Fund Raising Version 2 has the capability of interfacing with several modules, such as SIS Word Processing, Laser Printer, Business Graphics, Direct Mail and Graphics Analysis packages. It is designed to accommodate information on 250,000 supporters, as opposed to the 50,000-supporter limit on the original Fund Raising package.

The price of Fund Raising Version 2 is \$15,000, with an additional charge for each module chosen.

SIS, 30 Park Plaza, Boston, Mass. 02116.

RIDGE COMPUTERS, INC.
SWANSON ANALYSIS SYSTEMS, INC.

Ansys agreement

Ridge Computers, Inc. and Swanson Analysis Systems, Inc. have announced an agreement that makes Swanson's Ansys structural analysis program available on Ridge's 52-bit microcomputers. The agreement is also said to cover such joint marketing functions as support at trade shows, seminars and demonstrations.

Ansys is a large-scale, general-purpose program that employs finite element technology running under the Unix System V operating system, the vendor said.

Price is \$2,300/mo.

Ridge Computers, 2451 Mission College Blvd., Santa Clara, Calif. 95054.

CTX INTERNATIONAL
Interfaces

CTX International has introduced two interfaces to its CTX4000 computer-integrated manufacturing system. The new interface software packages can pass data directly from semiconductor fabrication equipment to the CTX4000 data base, according to the vendor.

The software includes interfaces to two Nanometrics, Inc. instruments: the Nanoline and Nanospec measuring devices. When used in conjunction with the CTX4000, these interfaces allow the capture of all or any part of the data available from these instruments, the vendor said.

The price for either package is \$5,000 in single-unit quantity.

CTX International, 575 N. Fortoria Ave., Sunnyvale, Calif. 94086.

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Programs in IBM's Assistant Series are like actors in a play. Alone, each gives an outstanding performance. Together, they've been directed to act well as a troupe. (In the software world, this interaction is called "integration.") Just as actors can easily perform on different stages, these programs can easily work on different IBM personal computers—from PCjr to larger systems like PC/XT.

How integrated software works.

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Little Bear character licensed by Bobbie's Inc., n.a.

*Available only on PC.

**Prices apply to IBM Product Centers.

SOFTWARE & SERVICES

HEINECK ASSOCIATES, INC.
General ledger

Heineck Associates, Inc. has announced a general ledger software package for the IBM System/34 and 36 computers that handles up to 90 companies. Users define their own income statement and balance sheet. Both of these reports may be used to compare the current year's figures with budget or last-year figures. The comparison may be done by month, quarter, year-to-date, four quarters or 12 months, a spokesman said.

Trial balance and general ledger reports are provided. A general journal report allows the user to print all entries with selected start and end dates, according to the vendor. Also included are adjusting and recurring journal entries.

Price of each package is \$500.

Heineck Associates, One Carriage Court, Stony Brook, N.Y. 11790.

SONY CORP. OF AMERICA
Long Document; Spelling Verification

Sony Corp. of America has introduced two software programs, Long Document and Spelling Verification, that run on its Series 55 word processing system.

Long Document is reportedly designed for preparation of legal briefs, academic theses, book manuscripts, research reports and engineering studies, Sony said. The product reportedly features floating footnotes, automatic seven-level outlining, automatic table of contents generation, index creation and automatic line numbering.

Spelling Verification, based on Houghton Mifflin Co.'s American

Heritage Dictionary, is said to contain 70,000 commonly used words and to have room for 3,000 user-defined words. Suspected errors are displayed on the screen, and the author has the option of making corrections or automatically entering the word in the user dictionary, according to the vendor.

Each program costs \$850.

Sony of America, Sony Drive, Park Ridge, N.J. 07659.

AMERICAN MANAGEMENT SYSTEMS, INC.
Automated Credit Application Processing System

American Management Systems, Inc. has announced a credit application processing package designed for use on IBM mainframes under IBM's MVS operating system with IBM's

CICS and VSAM.

The Automated Credit Application Processing System (Acaps) manages the application process from initial data entry through new account setup, providing on-line access to all customer application information, according to the vendor. The system records actions taken on an application, performs credit scores and automatically requests and retrieves credit reports.

Acaps is priced at \$150,000.

American Management Systems, Three Twin Dolphins Drive, Redwood City, Calif. 94065.

CONSOLIDATED DATA PROCESSING, INC.
Arrow Mail

Consolidated Data Processing, Inc. has announced that its electronic mail software now runs on the Burroughs Corp. B3000 through B4800 computers.

The software runs in current Burroughs environments without modification, according to a spokesman for the vendor.

Arrow Mail is in use for diverse services such as scheduling transcontinental flights, transmitting court documents and handling citywide municipal communications, the spokesman said.

Arrow Mail systems start at \$7,000, depending on environment, the vendor said.

Consolidated Data Processing, 34300 Lakeland Blvd., Euclid, Ohio 44094.

QAK SOFTWARE, INC.
Oakword enhancements

Oak Software, Inc. has announced that its Oakword word processing package for IBM System/34, System/36 and System/38 processors now supports a number of letter-quality printers.

According to a spokesman, Oakword now supports printers distributed by General Business Technology, Inc., Ampak Business Systems, Inc. and Decision Data Computer Corp.

All necessary codes for proper operation of the printers have reportedly been built into the software.

Oakword is said to include a full screen text editor with 22 commands, automatic pagination, automatic table of contents generation, mathematical functions, a built-in name and address file and spelling verification capabilities with a 75,000-word dictionary.

The package is priced at \$2,500 for the System/34 and System/36 and \$3,500 for the System/38, according to the spokesman.

Oak Software, 1354 Pierce St., Clearwater, Fla. 33516.

IBM Assistant Series. Divided they stand.



make using IBM Filing Assistant even easier. To help you with record keeping, several predefined, often-used forms are included in each Solutions package.

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But the programs aren't hard to work. Many of the menus, commands and function keys are the same. So once you've learned one program, you're well on your way to mastering the rest.

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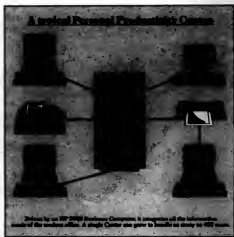
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SOFTWARE & SERVICES

DATA BASE
MANAGEMENT
SYSTEMSINFORMIX, INC.
Informix

Informix, Inc. has announced a relational data

base management system for its Gen-V supermicro.

The menu-driven Informix is said to incorporate full-featured screen generation, report writing and query language modules. The Cobol offered on Gen-V can be used to write programs that interface with Informix. Informix

costs \$1,600.

Informix, 186 Middlesex Turnpike, Burlington, Mass. 01803.

FUSION PRODUCTS
INTERNATIONAL
Fusion/5

Fusion Products Interna-

tional has introduced Fusion/5, a data base management system that runs on the IBM System/38.

Fusion/5 reportedly validates data on input, accesses data base files and completes table look-ups. The product is said to allow users to perform ad hoc queries, create

ad hoc reports and financial modeling and create color graphics.

Fusion/5 costs \$2,500, the vendor said.

Fusion Products International, Suite 300, 950 Lehigh Avenue, Lehigh, Pa., 18201, 610-393-1533.

See 80888 page 82

COSTS from page 45

usually have at your disposal a computer that is far more

powerful than any you could afford to buy in-house.

■ Growth potential. Because service bureau comput-

ers are large to begin with, there is no problem increasing capacity as you grow. In addition, when you become

large enough to afford your own in-house computer, some bureaus allow you to buy the software you have

been using.

But despite their benefits, service bureaus are not the best of all possible worlds. Some drawbacks include the following:

■ Lack of flexibility. Most computer systems go down periodically. When this occurs, most service bureaus give top priority to their highest billing customers. If you are a smaller company, it may be quite a while before you get any attention following a systems failure.

■ Client priorities. All computer systems go down periodically. When this occurs, most service bureaus give top priority to their highest billing customers. If you are a smaller company, it may be quite a while before you get any attention following a systems failure.

■ Response lag. No matter how large or powerful your service bureau's computer is, data transmission will often be slowed by the inefficiencies of the phone lines used for computer/terminal communications. Also, because you are working with a company in a remote location, it may take longer than you would like to get special reports or other nonroutine jobs off a service bureau's computer.

■ Cost inefficiencies. As a company grows, the use of a service bureau becomes less and less cost effective. Data storage charges can be particularly onerous for larger users. For this reason, organizations tend to bring their data processing in-house upon reaching a certain size.

Batch or on-line

Most service bureaus offer two ways for clients to operate: batch or on-line. Batch systems require you to ship your work manually to the bureau for processing. The method is slow, but often very economical.

Being on-line means you communicate directly with the service bureau's computer via your own remote terminals and printers. For many applications, working on-line is not very different from having a system of your own.

Selecting the best data processing method for your company is a matter of compromise.

Is control, speed, flexibility and responsiveness critical to your operations?

If so, an in-house computer may be the only alternative. However, if economy is your paramount concern, you will probably be more satisfied working with an outside service bureau.

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The CIE-7600 is also available with concurrent alternate personalities that include DEC VT100, IBM 3275/3278-2 (biplane single station) and HP 2622, while still retaining IBM 3178/3278 compatibility.

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SOFTWARE & SERVICES

DBMS from page 60**INFORMATION BUILDERS, INC.**
Focus Link

Information Builders, Inc. has announced two product links to its Focus data base management system (DBMS) and fourth-generation language.

According to a spokesman, IBM VM/CMS users of Focus can now report from Clincon Systems, Inc.'s Total files controlled by IBM's DOS/VSE operating system. The CMS-to-DOS/

Total interface is part of the Focus Cross Machine Interface (XMI) available to users. The interface allows multiple Focus users running VM/CMS to read DOS/Total data bases allocated on other virtual machines.

Focus query language facilities, including report writing, graphics, statistics and financial modeling, can be used to access data stored in Total data bases.

Using the interface, data from Total files can also be downloaded to microcomputers with Information Builders' Foclink micro-mainframe link and structured in either Soft-

ware Arts, Inc.'s Data Interchange Format (DIF), Lotus Development Corp. or ASCII formats. The XMI interface is available for users running both CMS/Focus and DOS/Total on the same computer under VM, according to the spokesman.

Also, Information Builders announced a Focus interface to Computer Corp. of America's Model 304 DBMS. The interface is said to permit Focus users running IBM's MVS/TSO to execute the full range of Focus reporting and data analysis functions against Model 304 data bases.

Model 304 data bases can be used

in Focus relational joint operations, such as can be dynamically joined to up to 10 Model 304, IBM Ques, Vase, Isean or DBS files, the vendor said.

Links between multiple Model 304 data bases can also be embedded into Focus master file descriptions of Model 304 files.

The CMS-to-DOS/Total and Model 304 interfaces are priced at \$4,500 or can be leased for \$240/mo, according to the vendor.

Information Builders, 1850 Broadway, New York, N.Y. 10001.

See DBMS page 60

DODGE from page 47

That is how M&D has been converting users to Milenium over the last two years while it rewrites its

entire stock of existing applications. And very shortly, the company will try the approach with a materials requirements planning (MRP) package it plans to acquire within a month.

M&D officials will not divulge the name of the package, but say it is already on the market under another company's logo.

PC Link appears to play at least as

important a part in the company's future, both as a generic product for applications software and as a foundation for future micro offerings. M&D has an announcement planned for later this year which will solidify PC Link as a centerpiece of its product line. The new product will reportedly work over dial-up telephone lines.

It will contain all the features of existing PC Link, but it will not require coaxial cable to make it work, officials said. Rather, it will use a hardware device developed by another vendor that not only accomplishes the file transfer, but allows IBM Personal Computer users to define macros for every key on the keyboard. M&D said the dial-up PC Link will actually be easier to use than the current version which uses Digital Communications Associates, Inc.'s Irma board.

How big is the demand for this kind of product? M&D estimates that 80% of the market for micro-mainframe links exists among users who want an alternative to expensive cabling. Dial-up could be used, for example, to link remote sites to a company's headquarters or to allow users to work at home.

At the user conference, M&D was heavily pushing Dumpplus, an IBM Personal Computer XT-based hardware/software combination that includes popular micro software and automatic access to a number of on-line services. This is only the first step in what looks to be a large-scale push by M&D in the microcomputer software market.

Just two weeks ago the company announced the acquisition of RL-1, a micro data base management system from ABW Corp. Officials said a number of additional micro products will follow within a year.

What has made all this activity possible is M&D's acquisition by Dun & Bradstreet Corp. (D&B) about a year ago. At the time, users and the industry raised a lot of questions about how M&D would change under the aegis of a corporate giant.

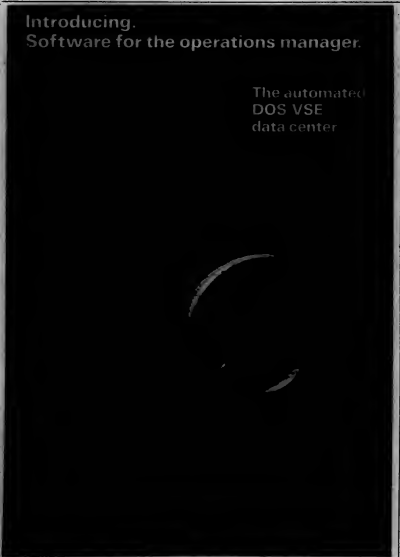
With some experience now under their belts, M&D executives are saying the acquisition was just about the best thing that has ever happened to their company. D&B has tried to exert little influence over M&D operations, officials said. Rather, the parent corporation has been "a building full of cash," in the words of one manager.

In light of the dismal performance of software stocks over the last year, M&D executives are understandably reveling in their insularity. If software stocks do not recover appreciably in the near future, their decision will certainly seem like a good one.

No matter what happens, you can be sure to see M&D in a lot of new markets by this time next year.

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**INFORMATION
SERVICES**

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SOFTWARE & SERVICES

DBMS from page 62

DBMS, INC.

Dictionary Module Editor

DBMS, Inc. has announced a full-screen editor reportedly designed to edit Cullinet Software, Inc.'s Integrated Data Dictionary (IDD) modules in Cullinet's IDMS database environment.

Dictionary Module Editor edits IDD modules on-line while maintain-

ing full IDD security. Users are said to be able to edit Cullinet's Culpit reports, Online Query Q-Files and Data Communications map tables.

The program features primary and line commands. Editing functions are said to include Insert, Delete, Repeat, Search and Replace. The program operates under IBM's OS/VS1, MVS or DOS/VS2 operating systems with Cullinet's IDMS-DC or UCF and AD8/Online. Its price is \$7,500.

DBMS, 1801 Mill St., Naperville, IL 60560.

BUSINESS COMPUTER SOLUTIONS, INC.

Answer for Wang VS

Business Computer Solutions, Inc. has announced the availability of its relational data base management system for users of Wang Laboratories, Inc.'s VS small business computer systems.

According to a spokesman for the company, Answer provides an application generator, a query language, a data dictionary, embedded lan-

guages, multiple security systems, a spreadsheet, a report generator and presentation services.

The Answer for Wang VS program is said to use a high-level, nonprocedural data manipulation language called QLV1.

Prices range from \$5,000 to \$55,000, depending on the various configurations, the vendor spokesman said.

Business Computer Solutions, Suite 802, 2855 Le Jeune Road, Coral Gables, Fla. 33134.

BATCH from page 47

cluding the on-line environment. Indeed, interviews with several on-line shops uncovered ratios as low as 15% and as high as 95%, with an average around 75%. If nothing else, the maintenance ratio in on-line shops is much more variable than in batch-oriented shops.

However, what is remarkable is not the variation of the on-line maintenance ratio, but the total amount of maintenance required. In one shop, an on-line system that cost \$1.5 million to build cost more than \$42 million to maintain over a seven-year period. With total amounts of maintenance of that magnitude, it is no wonder that the maintenance-to-development ratio is high in the on-line environment.

But a closer look at what appears to be excessive on-line maintenance indicates that something beyond traditional maintenance (that is, maintenance as it is understood in the

batch environment) is occurring. The bulk of the activity that is occurring is post implementation design and development, a phenomenon that occurs almost exclusively in the on-line environment.

Consider the following typical sequence of events. As the on-line system is implemented, the user and designer discover that the system performs poorly or goes down for inordinate amounts of time. At this point, the designer goes back into the system code and attempts to make corrections.

The problem is that the basic architecture of the application has already been set. The data bases have been designed and the transactions have been programmed. Making fundamental architectural changes is very difficult to do at this point, even though the deep-seated issues of on-line performance and availability are addressed at the architectural level. So patch after patch is applied to the on-line system.

The designer realizes after the fact that on-line performance and availability are as much a part of the user's requirements as are the business functions specified by the user. The assumption made by the user and the designer that on-line systems running on a large and fast machine will exhibit adequate performance is, once again, proven to be a false assumption.

Trying to implement on-line performance and availability after the fact is very expensive because the fundamentals of on-line systems are not easily changed in place.

Thus is born post implementation design and development. It is true that an on-line system is up and running — although poorly — and it is true that changes are made to the system, so the activity of post implementation design and development appears to be maintenance. In fact, it is the price a company pays for not recognizing all the design issues — both the obvious and the subtle.

Not all on-line shops experience post implementation design and development of on-line systems. Interestingly, in the on-line shops that have maintenance ratios as low as 15%, there is no sign of post implementation design and development. In those shops, much attention is paid at the moment of design to performance and availability, as well as to the user's functional specifications. Once into implementation, only normal user changes were experienced.

On-line shops often demonstrate a different pattern of maintenance than do batch shops. While batch maintenance can be described in terms of "fix it," changes and additions, on-line maintenance must be described in those categories and another category — that of post implementation design and development. This fourth category of maintenance explains the wide variations of maintenance-to-development ratios found in the on-line environment.

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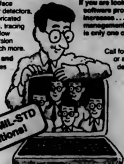
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COMMUNICATIONS

FCC set to relax satellite rules



DATA SYSTEM
John Ch.
Orin Editor

In keeping with efforts to reduce communications regulations, the Federal Communications Commission recently decided to let the market rule the domestic satellite business, the nascent digital termination systems market and long-haul carriers that are owned by independent local telephone companies.

The decision is likely to have the greatest effect on satellite carriers, where increased satellite availability has created a buyers' market. The market for digital termination systems is still too young to be broadly affected by the ruling, and the deregulation of the long-distance carriers is only in keeping with the deregulation of other suppliers like MCI Communications Corp.

By forgoing from regulation of domestic communications satellites, the FCC has lifted the requirements for carriers to file proposed changes to their services and rates. There is, apparently, still some question as to whether the satellite carriers have to file their rates for a matter of record, according to Bill Dunne, a spokesman for Satellite Business Systems (SBS) in McLean, Va.

A source within the FCC said that the commission's decision was based on the belief that competition is ripe among satellite carriers and between these carriers and terrestrial-based service providers. "For a long time there were so few firms providing communications services, that you needed government regulation to get by."

See **SATELLITE** page 70

Leased-line dependence seen easing in large companies

ELLIOTT CITY, Md.—Large corporations that now rely heavily on leased lines for data communications will steadily ease that dependence for at least the next two years, according to a survey of Fortune 8,000 companies.

Telecommunications and data processing executives reported that they are now spending an average of 66.5% of their data transmission budgets for leased lines, but that that figure will drop to 53% by 1987, according to a mid-June mail survey by Newton-Evans Research Co., a computer industry research firm based here.

Other findings cited in the 166-page report include:

- Equipment accounts for 45% of the data communications budget, services 38%.

- Reliance on AT&T will decrease in the next few years, but it will remain the dominant data communications service supplier.

- Data communications expenditures for 1987 will be almost double those of 1983.

- Many companies are deferring long-term data communications equipment purchases, but 44% are considering integrated voice and data private branch exchanges (PBX).

In addition to their reliance on leased lines, the 106 respondents said 21.9% of their investments are for value-added networks, 7.2% for satellite services, 26.6% for microwave links and 21.4% for dial-up lines. By 1987, the share for value-added networks will drop to 10.4% and dial-up to 18.3%, while satellite services will increase to 22% and microwave links to 18.3%.

Just over half of the respondents (51%) said they plan to be less reliant on AT&T for communications services by 1987, while only 9% said they will be making more extensive use of AT&T services. However, AT&T was cited as the dominant

supplier of data communications equipment in 1987 by 56% of the respondents, compared with 26% for IBM. Regarding communications service, 74% of the executives said AT&T will be dominant in 1987, compared with 10% for IBM.

While the respondents said they spent an average of \$170,304 for data communications in 1983, they expect to spend an average of \$325,006 in 1987.

Newton-Evans noted that half of the participants said they are deferring long-term (five years or more) data communications purchases, but that the financial (33%) and service (38%) sectors are more likely to be making long-term purchases than the manufacturing sector (22%).

Forty-five percent of the respondents said they are not yet using integrated data communications facilities, but a plurality of the executives (44%) said someday they expected to use integrated voice and data PBX systems. One-third said they were uncertain about whether they will choose a PBX or a local-area network, 16% cited interest in broadband local-area networks and 10% said they were looking to baseband local-area networks.

Other study findings were that compatibility between computer devices is still a problem in two-thirds of the firms, and telecommuting is still in its infancy.

More than half (56%) of the respondents said they have no plans to use remote computing services. Criteria in deciding whether to use a public data network were ranked with network reliability rated most important, followed by price, network availability, number of access points and data transmission security.

The survey costs \$750. Newton-Evans said that customers will also receive its earlier survey "Microcomputer Usage Trends in Fortune 1,800 Corporations."

Newton-Evans is located at Suite 204, Dechay 40 Center, 10175 Baltimore National Pike, Ellicott City, Md. 21043.

Executives get electronic mail

LAKE SUCCESS, N.Y.—Eastern States Bank Card Association has announced an on-line electronic mail service said to be designed for corporate executives using desktop microcomputers.

The Immediate Mail Processing and Communication Terminal (IMPACT) can be accessed by users of GTE Teletext Communications Corp.'s public data network. Impact users can send and receive messages from a microcomputer using 14 basic commands.

Impact records the time of day a message was sent or received as proof of transmission, the vendor said.

Price is \$60/mo per mailbox for one to 25 mailboxes, with discounts available for more than 25 mailboxes.

Additional information is available from Eastern States Bank Card Association, which is located at 4 Oak Drive, Lake Success, N.Y. 11042.

Server connects terminals, SNA

MOUNTAIN VIEW, Calif.—Bridge Communications, Inc. has introduced a communications server that, through protocol conversion, gives asynchronous Ascl devices on a local network a gateway into the IBM Systems Network Architecture (SNA) environment.

Called the CS/1-SNA, the server's cost can be amortized across all networked devices because each device on the network can access it via a port-contention mechanism.

Each CS/1-SNA can reportedly handle up to 24 Ascl terminal devices. Terminals supported include Digital Equipment Corp.'s VT100, Teletype Corp.'s Model 825 and IBM's 3101.

The server is based on a dedicated Motorola, Inc. 68000 microprocessor. The CS/1-SNA is priced at \$13,000 per unit plus a \$1,000 annual software fee.

Bridge Communications is located at 151 Sherrill Way, Mountain View, Calif. 94043.

HP announces protocol tool

PALO ALTO, Calif.— Hewlett-Packard Co. has announced a protocol analyzer designed for use in communications and DP centers requiring remote-control monitoring of bit-oriented protocols at speeds of up to 256K bit/sec and simulation at speeds up to 72K bit/sec.

The HP 4063A, which has 64K bytes of buffer memory and 812K bytes of tape storage, is said to be geared toward on-site installation and troubleshooting. Separate ports allow concurrent remote testing and monitoring without switching data links, according to the vendor spokesman.

It is said to display X.25, X.75, digital data communications message, asynchronous High-Level Data Link Control, Synchronous Data Link Control and other protocols.

The HP 4063A costs \$12,000. The Option 001 256K-byte buffer memory costs \$1,500.

HP is located at 1830 Embarcadero Road, Palo Alto, Calif. 94303.

Infinet releases two service units

ANDOVER, Mass.—Infinet, Inc. has introduced two new digital data service units for use with AT&T's Dataphone Digital Service, which are said to be compatible with AT&T's data service units products.

The Infinet products, called Integrated Service Units (ISU), are said to add digital transmission and diagnostic capabilities to Infinet's line of modems and multiplexers.

They can reportedly be equipped with an optional diagnostic card for central-site control and diagnostics. Central-site controllers also support test and control functions, command status transmission to a central site, automatic disconnect of streaming terminals and test pattern generation for end-to-end testing.

The 8225 ISU 500 operates at switch-selectable speeds of 2,400, 4,800 and 9,600 bit/sec. The ISU 500 transmits at a reported speed of 9.6K bit/sec and costs \$1,500.

Infinet is located at 81 Shattuck Road, Andover, Mass. 01810.

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COMMUNICATIONS

VOICE/DATA
COMMUNICATIONSBOLM CORP.; JOHNSON
CONTROLS, INC.
JC/Link

Bolm Corp. and Johnson Controls, Inc. have jointly developed a bridge device said to permit the use of the IBM Cabling System or standard twisted-pair telephone wiring for data signaling between a master computer and control units within the Johnson Controls' JC/SS Building Automation system.

JC/Link is said to be designed to reduce building automation system wiring costs and installation time in new or existing buildings.

JC/Link is priced between \$800 and \$1,300 per monitoring or control

point or telephone.

Robn, 4900 Fronteras Drive, Santa Clara, Calif. 95050.

MULTIPLEXERS/
MODEMSCONCORD DATA SYSTEMS, INC.
Modem price reductions

Concord Data Systems, Inc. has announced price cuts on its 2,400 bit/sec domestic and international, full-duplex, dial and autodial modems.

The CDS 224/V.22bis costs \$846 and the CDS 224/V.22bis costs \$906.

The modems can be used with a variety of telecommunications packages, including I.E. Systems, Inc.'s Acculink, Dynamic Microprocessor Associates, Inc.'s Ascom, Microsoft,

Inc.'s Crosstalk and Gateway Microsystems, Inc.'s Microgate.
Concord Data Systems, 303 Bear Hill Road, Waltham, Mass. 02154.

RACAL-MILGO, INC.
OmniLink T-1

Racal-Milgo, Inc. has introduced the OmniLink T-1, a time-division multiplexer that can combine data and voice channels over wideband circuits.

The multiplexer supports both the North American standard T1 rate of 1.544M bit/sec or the European 2.048M bit/sec standard. The device is also said to permit software reconfiguration and downline loading of network functions.

The vendor reported that the product can support voice channels with bandwidth requirements of

16K, 32K, 48K and 64K bit/sec. These features reportedly can be combined and varied to meet individual user designs.

Through protocol transparent operation, OmniLink T-1 reportedly accepts independent transmissions from a variety of data terminal equipment operating in the same network. The multiplexer offers a central site network console that facilitates the monitoring of net functions and procedures, the vendor said.

Price of the multiplexer varies depending on configuration. A 44-channel configuration in a single chassis supporting RS-232C asynchronous data is approximately \$35,000. A 96-channel unit costs about \$70,000.

Racal-Milgo, 6000 N.W. 41st St., Miami, Fla. 33166.

LOCAL-AREA
NETWORKSLINK TELECOMMUNICATIONS,
INC.
Model 5010

Link Telecommunications, Inc. (LTI) has announced a 2M bit/sec modem for use with broadband dual-cable networks. The Model 5010, reportedly the first in a forthcoming series of modems, is available as a part of LTI's Linknet local-area network or as a discrete, stand-alone unit that can be integrated into customer networks or devices.

The Model 5010 costs \$496/unit in quantities of 100, with discounts available for larger quantities.

Link Telecommunications, 2400 Computer Drive, Westboro, Mass. 01581.

See NETWORKS page 60

HACKER PROOF

Have SECURE dial access to ANY computer
using NO passwords and NO dialback
with DATA LOCK & KEY™

Simply connect a DATA LOCK (shown above) between your mainframe and your modems. It's the portable DATA KEYS (shown below) to all authorized personnel. Only these members of your staff can access your system—



from any telephone—and they need no passwords! They simply dial in, and are connected.

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Only a DATA KEY can provide correct responses to the large random numbers sent by the DATA LOCK. Thus the LOCK

quickly identifies authorized users, and allows them to access the mainframe. Because the numbers are random, the dialogue between LOCK and KEY is different every time a user dials in.

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SPECIFICATIONS
DATA LOCK &
KEY™ works with all

computers and modems with RS232C connections. The system is compatible with Async, Bsync, SNA/SDLC and all other protocols. No adjustments are necessary for protocol, baud rate, modem type, etc. Protocols and mainframes of different types can be simultaneously supported by one DATA LOCK.

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DATA KEYS supported by

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PRICE: DATA LOCK—\$4,000

DATA KEY—\$400



Microframes Inc.
205 Livingston Ave.
New Brunswick, NJ 08901
(201) 828-4499

SATELLITE from page 67

sure against antipublic behavior." But with enough players in place, the logic goes, users are best served by companies [that] are competing for business on product and price.

The gradual increase of suppliers has tightened the screws of competition. Since 1980, the number of carriers operating satellites has more than doubled. A number of other carriers have the go-ahead to construct and launch systems.

According to some analysts, supply already outstrips demand for satellite capacity. "The industry is in a surplus editor of 'Satellite News', an industry newsletter, said that there is an "oversupply of transponders" today. He noted, however, that it is hard to qualify how large this oversupply is because some transponders — amplifiers used on satellites — are reserved for redundancy uses.

It is Williams' belief that this supply abundance, coupled with the deregulation of the carriers, will result in more intense price competition. He noted, however, that price competition in this market is not exactly new, and that he does not expect any all-out price war to ensue.

The forbearance from regulation will, in the short term, perhaps most benefit those carriers that offer long-distance telephone services.

BSI's Bill Dumas said that the removal of restrictions will enable his company to change prices quickly, an important consideration in telephone services because the competition is so intense.

Ins

Outs



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COMMUNICATIONS

NETWORKS from page 70

STANDARD MICROSYSTEMS CORP.

Arcnet-Link

Standard Microsystems Corp. has introduced the Arcnet-Link module to interface devices with synchronous RS-232 serial ports to DataPoint Corp.'s Arcnet local network.

According to the vendor, the equipment incorporates Standard Microsystems' COM Local-Area Network Controller and COM 9092 Local-Area Network Transceiver MOS/VLSI circuits.

The Arcnet-Link is also said to incorporate a simplified protocol for communication via the RS-232 serial port. A 2K-byte data packet buffer provides four pages of packet storage.

The Arcnet-Link Module costs \$895 per piece for one to 34 pieces.

Standard Microsystems, 35 Marcus Blvd., Hauppauge, N.Y. 11786.

UNGERMANN-BASS, INC.

NEU price cuts

Ungerma-Bass, Inc. has announced price cuts for its Ethernet-compatible Network Repeater Units (NRU), designed to prevent distortion on baseband cable segments longer than 600 meters.

The firm's local NRU, used to extend Ethernet to 1,500 meters by connecting 500-meter segments, is being reduced from \$2,800 to \$1,475.

The remote repeater unit, which

extends a network by adding up to 1,000 meters of fiber-optic cable between two baseband cable segments, is being reduced from \$3,850 to \$3,100.

Ungerma-Bass, 5560 Mission College Blvd., Santa Clara, Calif. 95050.

3COM CORP.

Etherterm

3Com Corp. recently introduced communications software that, when used in conjunction with a communications server made by Bridge Communications, Inc., enables personal computers and compatibles to emulate an Accl terminal.

According to a spokesman for the company, the Etherterm asynchronous communications package is said to be a result of an agreement between the two companies to develop compatibility between 3Com's Ether-series local networks and Bridge's family of communications and gateway servers.

With Etherterm, a personal computer connected to a 3Com local network can emulate a TTY-type terminal, a Digital Equipment Corp. VT100 or a DEC VT52 and communicate with minis and mainframes through a Bridge network server.

The Etherterm asynchronous terminal emulation software will be available in September for \$700 for an IBM Personal Computer-based server and \$1,300 for 3Com's AP server.

3Com, 1365 Shorebird Way, Mountain View, Calif. 94039.

AUXILIARY EQUIPMENT

C.H. SYSTEMS, INC.

Smith

C.H. Systems, Inc. has introduced a dial-back access authenticator designed for use with Hayes Microcomputer Products, Inc.'s Smartmodem 300 or 1200 and compatibles.

Installed between the computer and Smartmodem, Smith requires users to type in an identification number and password. Upon validation, the system dials back the user and establishes normal modem connections.

Smith is menu driven and can only be programmed at the host computer site using a special security password. The program holds up to 74 names, passwords and phone numbers. All data is retained if the power fails.

The program is compatible with computers using standard RS-232C interfaces and needs no external software, the company said.

Suggested retail price of the unit, including the power supply, manual and RS-232C cable, is \$465.

C.H. Systems, Suite 108, 5533 W. Sunset Blvd., Los Angeles, Calif. 90062.

CYBERNETX LTD.

MIU/10

Cybernetx Ltd. has announced a multiple interface unit said to link up to 10 Honeywell, Inc. VIP7700 or VIP7800 terminals to a Honeywell host computer in a multidrop envi-

ronment.

The MIU/10 was designed for applications that require signal regeneration, bidirectional signal fan out with poll-select protocol or a plug-compatible multiple interface unit for Honeywell installations.

The MIU/10 can be used on any host processor that uses a poll-select line-control protocol.

The MIU/10 costs \$995. Cybernetx, 1257 Algonquin Road, Ottawa, Ont. K1G3T8.

DIGITRONICS

INVENTIONENGINEERING CORP.

6-DIOB/N

Digitronics InventionEngineering Corp. has announced a network interface that reportedly can link any host computer to its Bitnet industrial control and energy management network.

According to a spokesman for the company, the 6-DIOB/N is an intelligent controller that attaches to hosts through a parallel interface and offloads the task of I/O management from the host and reportedly creates a transparent multitasking environment.

Bitnet is the vendor's network controller for use in industrial applications and in building maintenance and energy maintenance systems, the spokesman said.

The data exchange rate is up to 4M bit/sec.

The product is priced at \$650, the spokesman said.

Digitronics InventionEngineering, P.O. Box 31, Clifton Park, N.Y. 12065.

PROBLEM:

You must add terminals to the Company's growing data distribution network. Conduit space is exhausted. You are faced with the ever-spiraling costs of cable and the manpower necessary to re-excavate. Time is running out.

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YOU NOW
OR I CAN MUX
YOU LATER"**

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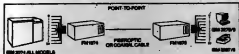
Send the construction crew packing! Choose the Fibronics Cable Bandit solution. A single installed fiberoptic or coaxial cable can now connect 32 of your terminals and printers. If you have 10 installed cables, you can connect 320 high data rate signals to remote peripherals up to a mile or more away. And, your Cable Bandit System will interface with most major controllers.

THE LATER SOLUTION:

Continue to sink your corporate assets into cable installation and hope that your buried conduit excavations strike oil.



The CABLE BANDIT SERIES is a range of fiberoptic or coaxial data distribution systems for use with 320 type controllers from IBM, TTT Courier, Memorex and Raytheon. Bulky cables between controllers and terminals are reduced to a single cable without requiring additional interfacing devices over standard distances. Find out how you can eliminate costly cabling, gain flexible networking alternatives, operate with local and remote control units, and expand your system with maximum cost-effectiveness.



Fibronics

International Inc.

fiberoptic communications 325 Sherman Street, Hymerville, MA 02041 Tel: (617) 778-0700 Telex: 912227 Fax: (617) 778-0822

SYSTEMS & PERIPHERALS

Global-Ulimacc adds high-end units to line

SAN JOSE, Calif. — Global-Ulimacc Systems, Inc., a majority-owned subsidiary of Storage Technology Corp., has announced two high-end additions to its line of preconfigured systems that are compatible with IBM's 4300 line. The two newly announced configurations are the USX43 and the USX46.

Based on CPUs developed by Global-Ulimacc's latest business acquisition, Magnuson Computer Systems, Inc., the USX43 system is said to provide greater throughput than the company's USX40 system, with processor performance said to fall be-

tween IBM's 4341 Model 11 and Model 12 processors.

The channels can be configured as selector, byte or block multiplexers, and the central processor can be expanded from three to eight channels to permit the user to tailor the processor to the application, the company said.

The USX43 features from 2M to 6M bytes of main memory, a millions of instructions per second (Mips) rate of .82, from three to eight channels and a 32K-byte cache buffer, the company said.

The two CPUs of the USX46 system are

intended to increase reliability, provide additional virtual storage and offer the ability to separate batch, on-line and test work loads, the company said. The USX46 system is said to provide twice the throughput of the IBM 4341 Model 11 processor.

The USX46 includes dual-port disk and tape subsystems from Storage Technology. The USX46 features from 4M to 16M bytes of main memory, a 1.96 Mips rate, from six to 16 channels and a 64K-byte cache buffer, the company said.

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INSIDE

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Norsk unveils 32-bit supermini series

By John Deamond
CW Staff

WELLSLEY, Mass. — Norsk Data North America, Inc. has announced the ND-600 series of 32-bit superminicomputers, said to feature a multiprocessor design and main memory sizes from 1.35M to 72M bytes and millions of instructions per second (Mips) rates from .6 to 3.3.

The ND-600 series is aimed at applications including office automation, professional development tools for administrative information systems, standard software for administrative routines, communications and advanced technical routines, the company said.

The ND-600/CX processors are said to

give a basic cycle time of 120 nsec and 32-bit logical address space divided into 4.30 bytes of data space and an additional 4.30 bytes of instruction space.

Variable-length instructions are accepted as well. Features of the multiprocessor architecture include: main memory that is accessible from main and front-end processors, as well as the direct-memory access (DMA) bus; a front-end processor that relieves main memory of the context-switching load; and peripherals such as disks and magnetic tapes that access the main memory via the DMA bus so the main and front-end processors can work independently of the I/O operations, the company said.

See 81.084M, page 82

Vendor sincerity: A fading trait



HAND TALK
Tom Harlow
Cris Sales Editor

Commitment is one of those words every prospective buyer likes to hear from a salesman. It is soothing to know that no matter how long you hold on to the item you are about to purchase, the supplier will be there when you need parts and service.

Such a commitment seems to be fading in the hotter segments of the computer industry. Blame it on the fast pace of the marketplace or on the inexperience of

entrepreneurial companies. But it is clear that many of the firms currently selling hardware will not be around in five years.

Take the microcomputer business as an example. A sudden demand for desktop micros prompted waves of start-up companies offering basically the same product. At one point there were more than 150 U.S. companies making some sort of microcomputer. Now it seems the microcomputer business is headed for a big tumble. There have been at least four major microcomputer companies that have filed for Chapter 11 protection since January. And most industry watchers predict more will come.

See COMMENT page 83

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CPU & KEYBOARD WITH
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DATA RENTALS SALES, Inc.

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"A PC MADE MY LIFE A LOT EASIER."



"BUT IT ALSO MADE IT A LOT LONELIER."



"I FOUND I WAS ISOLATED FROM MY COLLEAGUES..."



"AND I COULDN'T COMMUNICATE WITH THE COMPANY MAINFRAME."



"THEN MY DP MANAGER GAVE ME THIS FLOPPY DISK FROM HONEYWELL."



"IT TRANSFORMED MY ISOLATED PC INTO A HONEYWELL WORKSTATION."



"NOW MY PC IS A GREAT COMMUNICATOR."



"AND I'VE BEEN FREED FROM SOLITARY CONFINEMENT."



Introducing the PC/7800 Micro to Mainframe link from Honeywell.

The PC/7800 software package transforms many personal computers running on MS-DOS® into Honeywell professional workstations. Now users who have been isolated can communicate directly with a large Honeywell GCOS - mainframe.

Being able to utilize the power and performance of the mainframe not only makes users less lonely, it can make them a lot more productive. They can take advantage of the wide range of Solution Center productivity software to perform their own information processing.

This can go a long way towards reducing the applications development backlog in the data processing department. And because PC/7800 allows users to draw from a shared database, corporate-wide data can become more consistent and up-to-date.

So why not turn these personal computers into powerful Honeywell professional workstations? To get your PC/7800 software package, just ask your DP manager to order it on his Honeywell HJS 439A order form. If he doesn't have this form, call toll-free 800-328-5111, extension 2727. In Minnesota, call collect 1-612-870-2142, extension 2727.

Another Big Idea from Honeywell Large Systems.

Look to Honeywell Large Systems for solutions to information management problems and for products ranging from powerful computers to comprehensive networking capabilities.

Together, we can find the answers.

Honeywell

SYSTEMS & PERIPHERALS

TURNKEY SYSTEMS

HONEYWELL, INC.

Direct store delivery system

Honeywell, Inc. has announced that its Application Systems Division will offer a direct store delivery system for supermarkets that is based on the company's 6/30 minicomputer.

Scheduled to be available in November, the direct store delivery system is intended to help supermarkets control deliveries from outside vendors, the company said.

With the use of a hand-held terminal, price and item information can be conveyed when a delivery is made to the store, the company said. The hand-held terminal can scan bar-code labels or be keypunched. The system is said to produce a document listing prices and items delivered after each delivery.

System software developed by Mini-Computer Business Applications, Inc. of Montrose, Calif., includes packages for general ledger, payroll, accounts receivable and accounts payable, a Honeywell spokesman said.

The system is based on Honeywell's Gnos operating system. The basic system comes with 512K bytes of main memory and 30M bytes of disk memory, the company said.

The product represents the company's second retail offering. An automated pharmacy system was introduced in 1979.

The price of an entry-level system, including the 6/30, a disk drive, a CRT terminal and a printer, is \$23,695, the company said.

Honeywell, Honeywell Plaza, Minneapolis, Minn. 55408.

TERMINALS

ISC SYSTEMS CORP.

Workstation Processor III

ISC Systems Corp. has announced a multifunction processor that features a dual-processor architecture and up to 10M bytes of disk storage.

The Workstation Processor III has a Zilog, Inc. Z80 microprocessor, which reportedly runs the vendor's banking application programs, and an Intel Corp. 8088 microprocessor, which is IBM Personal Computer-compatible and supports Microsoft Corp.'s MS-DOS and the vendor's Pinnacle financial terminal.

The Workstation Processor III is said to provide all the functions of the vendor's Pinnacle system and to be compatible with the Pinnacle.

The unit comes in two versions. A version with one pair of floppy disks is priced at \$4,850. A second version, with one floppy disk and one Winchester disk, costs \$6,650.

ISC Systems, E. 901 Second Ave., Spokane, Wash. 99220.

COLORGRAPHIC

COMMUNICATIONS CORP.

XL Color Graphic Display Processor

Colorgraphic Communications Corp. has announced the XL Color Graphic Display Processor, said to provide a 1,024- by 512-pixel by 4-plane display memory. The vendor said it can be used with any CPU via an RS-232C port, at rates of 100 to 19.2K bit/sec.

Its text mode is said to be in compliance with American and international standards, including ANSI X3.41 and X3.64 and ISO 6429. Most Digital Equipment Corp. VT100 and VT52 terminal functions are said to be supported.

Its 32-kHz display monitor is said to provide a 640- by 640-pixel resolution.

The price of an XL Graphics board is \$2,000. The 32 kHz, 19-in. monitor costs \$5,000. The 32 kHz, 19-in. monitor costs \$3,500.

Colorgraphic Communications, 3779 John Glenn Drive, P.O. Box 80445, Atlanta, Ga. 30366.

TERA CORP.

ED Workstation

Tera Corp. has announced an editing workstation that converts film,

paper and computer-aided design (CAD)-generated drawings into raster images. Drawings stored on film and paper can be scanned into the editing workstation and modified. In addition, new records can be transmitted directly from installed CAD systems, edited and output to film and paper, the vendor said.

The Editing Display (ED) Workstation comprises four primary components: an aperture card scanner with Hollerith code-reading capability; a high-resolution display terminal; Motorola, Inc. M68000 and IBM Personal Computer XT processors that provide image panning, zooming, rotation and raster and vector editing; and a high-speed laser printer.

In addition, a graphics symbol library is offered, and a custom library of popular drawing symbols can be created.

The price of the ED Workstation is between \$42,000 and \$68,000, depending on configuration.

Tera, 2150 Shattuck Ave., Berkeley, Calif. 94704.

PRINTERS/PLOTTERS

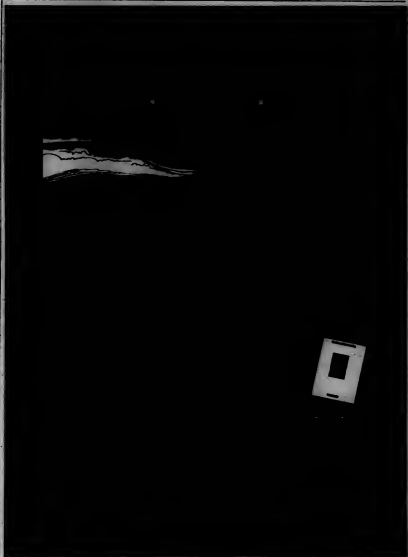
PERIX CORP.

Model 800 Magnetic Page Printer

Perix Corp. has introduced a non-impact office printer that is based on a patented thin-film magnetic recording head.

The Model 800 Magnetic Page Printer operates at 10 page/min and was designed for office printing applications ranging from 2,000 to 10,000 page/mo.

Continued on page 77



WITH DATA GENERAL YOUR COMPUTER WON'T BE ABANDONED AT YOUR DOORSTEP



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Some computer companies will sell you their bright new systems—and then disappear. Not Data General. We understand the service and support needs of the automated business office. Our Comprehensive Electronic Office (CEO)[®] gives you a system that will run smoothly with the help of one of the most complete service and maintenance plans in the entire industry.

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SYSTEMS & PERIPHERALS

Continued from page 76

The printer is being marketed only to OEMs and distributors. The cost of the printer in the OEM market ranges from \$2,000 to \$3,000, depending on options and quantities.

Peris, 48671 Milmont Drive, Fremont, Calif. 94536.

MICRODATA CORP.

Printer, plotter for M1000

Microdata Corp. has introduced a parallel dot matrix printer and a six-pen graphics plotter for its M1000 Relational Workstation.

The dot matrix printer has a print rate of 160 char./sec and supports up to 128 char./line, the company said. The printing is said to be bidirectional in the text mode and to support 32 character size and pitch combinations. Standard ASCII characters, international character sets and B&B characters are included.

The six-pen graphics plotter reportedly allows graphs to be plotted from a carousel mechanism that uses six of 10 colors. Pens are selected from the rotating carousel, returned to place and capped after use. A built-in demonstration plot allows pen widths and colors to be tested before they are used. Both 8 1/2-by-11-in. and 11-by-17-in. paper can be used on the plotter.

The dot matrix printer is priced at \$325 without cabling, and the plotter costs \$1,890 without cabling.

Microdata, 17421 Red Hill Ave., Irving, Calif. 92714.

AMDEK CORP.

6025

Amdek Corp. has announced a 25 char./sec. letter-quality printer.

The 5025 was designed to use an RS-232C serial interface or a Centronics Data Computer Corp.- or IBM-compatible parallel interface, making it compatible with several microcomputers and word processing machines, including the IBM Personal Computer, Apple Computer, Inc. Apple IIe and Macintosh; Digital Equipment Corp. Rainbow; and Radio Shack Corp. TRS-80.

The unit includes either a 2K-byte buffer that will store up to 2,948 characters or an 8K-byte buffer that will store up to 8,192 characters.

The bidirectional printer has an adjustable character spacing of 10, 12 or 16 char./in. and can handle paper up to 16 in. wide.

Each printer is shipped with a daisywheel, a ribbon cassette cartridge, a parallel interface cable, a paper guide and full documentation.

The Amdek 5025 printer sells for \$690.

Amdek, 2201 Lively Blvd., Elk Grove Village, Ill. 60007.

CPU and a high-resolution color monitor. It provides 1,024-by-781-pixel resolution, with Tektronix, Inc. 4100 terminal compatibility, the vendor said. The product is said to feature independent pixel pen and zoom over each graphics surface. The standard configuration supports either one or two graphics surfaces.

The basic CG2100 with one CPU module, one graphics surface, one keyboard and two parallel and two RS-232 interfaces is priced at \$3,990. A two-surface configuration costs \$5,595.

Cybernex, 1857 Algoma Road, Ottawa, Ont., Canada K1G 3T8.

SEIKO INSTRUMENTS, INC.

GC Series 1000

Seiko Instruments, Inc. has entered the distributed graphics pro-

cessing field with its recent announcement of the GC Series 1000 graphics workstation.

Designed as an adjunct to Seiko's Graphics Devices and Systems Division's D-Scan terminals, the series converts any one of the D-Scan GB-1100 series or GB-5400 series color graphics terminals into a workstation for graphics applications, the vendor said.

According to the company, the GC-1000 series streamlines communications and offloads tasks from the host computer, such as Digital Equipment Corp.'s VAX and PDP-11 series processors. The series is based on the 16-bit, Intel Corp. 8086 microprocessor with local random-access memory (RAM) and mass storage, running Digital Research, Inc.'s Concurrent CP/M 86 multitasking operating system.

The GC-1000, Model 1000, consists of 256K bytes of RAM, one 5 1/4-in. 800K-byte floppy disk drive, a bidirectional parallel interface and four serial I/O ports: two RS-232, one RS-422 and one RS-232 or RS-422. The system has optional expansion of up to 1,638K bytes of RAM.

The GC-1000 Model 1000 incorporates the standard features and options of the Model 1000 and adds a four-slot Intel Multibus card cage with three slots available for specialized applications, such as additional memory, processor communications channels or special-purpose boards, the vendor said.

Standard languages available for the GC-1000 include C, C-Basic and Fortran-77. The GC-1000 series also supports Graphics System Extension, a Graphics Kernel Standard compli-

Continued on page 79



GRAPHICS SYSTEMS

CYBERNEX LTD.

CG2100

Cybernex Ltd. has introduced a color graphics controller that is said to be designed for the computer-aided design, manufacturing and engineering system integrator and OEM market.

The CG2100 consists of a Motorola, Inc. 68000 microprocessor-based color graphics display generator with a detachable keyboard. Its external I/O interfaces connect to a

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intel

SYSTEMS & PERIPHERALS

Continued from page 77

as basis for graphics application development.

A spokesman for the firm said various models, dependent upon memory, size and disk capacity, can support from one to three graphics terminals, either GB-1000 series or GB-3400s.

Prices on the GC-1000 series start at \$4,950.

Selbo Instruments, Graphics Devices and Systems Division, 1623 Buckeye Drive, Milpitas, Calif. 95035.

ADVANCED ELECTRONICS DESIGN, INC.

Colorware System 73

Advanced Electronics Design, Inc. has announced a family of graphics workstations that feature Digital Equipment Corp.'s LSI-11/73 CPU. The Colorware System 73 provides local processing and data storage capability for use in computer-aided design, architectural design, computer-aided design and drafting.

The Colorware Systems 73/10, 73/7 and 73/5 provide full color graphics and screen resolutions of 1,024 by 768 pixels, 768 by 576 pixels and 512 by 483 pixels, respectively. Each system has 566 simultaneously displayable colors from a palette of 16.7 million colors and uses a 19-in. monitor.

Independent manipulation of the eight video memory planes, through the use of read/write masking, permits the user to develop color overlays. System 73 comes with a standard keyboard or optional data table and/or mouse.

Base prices for the Colorware System 73 are: \$30,500 for the System 73/10; \$24,940 for the System 73/7; and \$23,500 for the System 73/5.

Advanced Electronics Design, 440 Pioreiro Ave., Sunnyvale, Calif. 94086.

CALMA CO.

Workstation enhancement

Calma Co., a subsidiary of General Electric Co., has announced it will begin incorporating Digital Equipment Corp.'s VAX-11/786 CPU into its line of computer-aided engineering, design and manufacturing workstations. The firm also uses CPUs manufactured by Apollo Computer, Inc.

The 32-bit DEC 11/786 is said to offer speed improvements of at least 14 times over the VAX-11/780 model, the company said. The gain can be achieved through system speed increases that result in more output per user, or by allowing the addition of more workstations per CPU.

The price for an 11/786-based system, including the company's Design Drafting and Manufacturing software package with two workstations, is \$600,000, the company said.

Calma, 2801 Tamm Drive, Santa Clara, Calif. 95050.

POWER SUPPLIES

ULTIMA ELECTRONICS, LTD.

FM 700B

Ultima Electronics, Ltd. has introduced a power monitor for electrical equipment users.

The Model FM 700B is a plug-in device that reportedly provides readings of electrical lines at any time. It tells the user when it is safe to run

certain equipment and warns that a surge or power failure has occurred.

A series of LEDs monitors voltage levels on the line in increments of five volts from 100V to 150V. When voltage exceeds the lower and upper limits, it signals an alarm until it is attended. When a power failure occurs, a second alarm alerts the user.

Price of the monitor is \$59.95.

Ultima Electronics, 21 Central Drive, Farmingdale, N.Y. 11735.

ELECTRONIC SPECIALISTS, INC.

KLE line conditioners

Electronic Specialists, Inc. has announced the KLE series of portable line conditioners intended to protect sensitive computer equipment.

Available for 350-, 500-, 1,000- and 2,000-watt loads, the KLE line

conditioners are said to deliver 130 volts at 2% regulation for 90- to 140-volt input variations.

The KLE series offers input spike suppression, transformer surge suppression, wide-band prefiltering and isolated winding line noise elimination, the company said.

The price of the 350-watt unit is \$292; the 500-watt unit, \$301; the 1,000-watt unit, \$542; and the 2,000-watt unit, \$677.

Electronic Specialists, 171 S. Main St., Melick, Mass. 01700.

TRCAD, INC.

Intelligent Workstation

Tricad, Inc. has announced the Intelligent Workstation for its Graphics 3 computer-aided design system intended for use by architects and engineers.

The workstation is based on the IBM System 9000, an intelligent terminal using the Motorola, Inc. 68000 microprocessor.

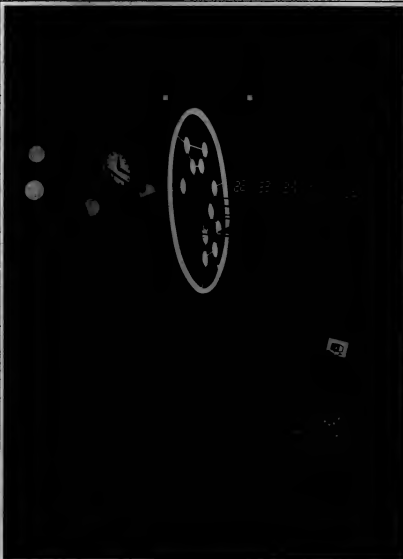
In addition, Tricad is integrating its Digital Equipment Corp. VAX-11 computer systems and the IBM 9000 into a local-area network using the Xerox Corp. Ethernet communications technology, a spokesman for the company said.

The Tricad Intelligent Workstation is said to take graphics manipulation out to workstations, freeing the CPU for other duties.

Graphics 3 now supports up to 10 workstations, the company spokesman said.

The price of the Tricad Intelligent Workstation is \$55,000, the spokesman said.

Tricad, 1655 McCarthy Blvd., Menlo Park, Calif. 94025.





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SYSTEMS & PERIPHERALS

BOARD-LEVEL DEVICES

INTERCONTINENTAL MICRO SYSTEMS, INC.
CPS-16X Slave

Intercontinental Micro Systems, Inc. has announced a 16-bit, 5100-bus slave board based on the Intel Corporation processor. The slave processor board is compatible with any 16-bit bus master with IEEE 604.2/D1 5100 specification compliance or any 8-bit 5100 master with extended address capability.

The CPS-16X Slave has memory mapped for 8- or 16-bit data transfers, 256K-byte and 1M-byte on-board random-access memory versions, two serial I/O ports, two parallel I/O ports, software-selectable bit/sec rates and vectored priority interrupt capability.

Its list price is \$1,395, with dealer OEM discounting available.

Intercontinental Micro Systems, 4015 Leavenworth Court, Anaheim, Calif. 92807.

MOSTEK CORP.

MER151

Mostek Corp. has introduced a diagnostic card designed for its MER200 general-purpose mass memory system.

The MER151 diagnostic card is said to verify that the MER200 is functional before it is placed on-line. In the event of a subsystem failure, the MER151 also assists the operator in identifying and isolating system problems to the random-access memory and card level, the vendor said.

The card features a text processor, is able to be capable of executing up to 12 different diagnostic algorithms and reporting any failures to its built-in diagnostic log. Operator-selectable scope loop tests are available to assist in isolating problems.

The user can reportedly communicate with the MER151 in one of three ways: via the control and display panel, via an integral RS-232C-compatible serial link provided with the card or via the front of the panel bus, which is part of the internal bus.

The price for the MER151 is \$6,500.

Mostek, 1216 W. Crowley Road, Carrollton, Texas 75006.

NORSK from page 73

The series consists of four models: the 530/CX, 550/CX, 560/CX and 570/CX and is available in three basic configurations, Models I, II and III.

A typical Model I configuration can have 30 to 50 terminals in use simultaneously, up to 8M bytes of main memory, up to 32K bytes of cache memory and up to 7,500M bytes of mass storage. With an extension feature, up to 128 terminals can be connected, the company said.

A Model II configuration, designed to meet high I/O requirements, includes cache memory upgradable to 64K bytes, the company said. This type of configuration is said to offer performance improvements of up to 60% for microcoded array processing tasks and to offer users of administrative systems and word processing more terminals, more communications lines and larger storage capacity. A maximum of 128 terminals can be connected to Model II, the com-

pany said.

Model III, available only with the 530/CX and the 560/CX, includes a Winchester disk drive of 140M bytes and a 45M-byte streaming tape drive for backup, the company said.

The company lists MIPS rates for the 530/CX at 8, for the 560/CX at 1.3, for the 550/CX at 2.1 and for the 570/CX at 3.3.

The price for the ND-530/CX Model I, including 3.25M-byte memory, 70M-byte removable disk, 140M-byte fixed disk, 34 terminals and printer, is \$215,000, the company said.

The price for the ND-570/CX Model II, including 4.25M-byte memory, magnetic tape, 450M-byte fixed disk drive, 34 terminals and printer, is \$485,000, the company said. Information is available from Norsk Data North America, 55 William St., Wellesley, Mass. 02181.

AUXILIARY EQUIPMENT

HEWLETT-PACKARD CO.
HP 64364S

Hewlett-Packard Co. has announced that its emulator for the Intel Corp. 8061 microprocessor, the HP 64364S, is now available as a subsystem for the HP 64000 logic development system.

The HP 64364S is said to run at 8061 operating speeds up to 12 MHz, providing an execution environment for testing and modifying hardware and software during development.

The product's additional features include support for four I/O ports.

The HP 64364S is priced at \$5,400, according to the vendor.

HP, 3000 Hammer St., Palo Alto, Calif. 94304.

TECHLAND SYSTEMS, INC.
Multitynx

Techland Systems, Inc. has introduced Multitynx DF2800, a port expander that allows eight telephone lines to be connected on a single mainframe communications port.

The product enables an IBM System/34 or System/36 with four ports to support 32 users, while an IBM System/38 with eight ports can maintain 64 users, Techland said. By connecting the product's in-conductor to the host's communications port, up to eight switched- or leased-line modems in any combination can be attached to the out connection, according to the vendor.

Multitynx DF2800 is priced at \$1,900.

Techland Systems, 25 Waterville Place, New York, N.Y. 10010.

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SYSTEMS & PERIPHERALS

COMMIT from page 73

The 32-bit graphics workstation marketplace is another business that seems headed for a similar washout. At least 30 vendors are now competing in this market, and more are announcing products every week. The problem is that all these new vendors are selling basically the same product: a workstation based on a Motorola, Inc. 68010 microprocessor that is capable of running the Unix operating system and offers an interface to Ethernet.

The same thing is also happening in the burgeoning fault-tolerant transaction processing business. Every few months, a start-up company announces plans to build a fault-tolerant system aimed at the transaction processing market. The problem is that all of these companies' prod-

ucts sound suspiciously alike.

As one industry analyst recently noted, the computer hardware market is starting to look like the breakfast cereal aisle of the local supermarket — the boxes may be different colors, but they all contain the same thing.

Failure is, unfortunately, one of the pitfalls of entrepreneurship. Most of the new successful hardware companies had some questionable moments and managed to survive. But one must wonder whether some of the current crop of start-up companies are trying to make a name for themselves or just trying to make a pile of money while a given market is hot.

Breaking into the computer hardware business used to be a difficult task. While start-up software companies were growing out of program-

mer's garages, the established hardware companies faced little competition. But the microprocessor, along with a host of other off-the-shelf components, has changed all that. Now it is easy for someone with an electrical engineering degree to develop the blueprints for a system and hire a fairly nontechnical team to assemble the product. Some hardware companies are so small they do not actually have corporate offices or manufacturing facilities. They simply use a telephone answering service to recruit prospects.

The question is whether these new hardware companies represent the epitome of the Protestant work ethic or the emulative profit-seeking made popular by the capitalists of the post Civil War South. Chances are, most companies have adopted aspects of both, but the result may

prove bad news for users.

Deciding which product to buy has never been easy, and the DP executive's job often rides on buying the right products. Determining the best product based on its performance and features used to be the key to making sound business decisions. Now a vendor's sincerity and commitment to the industry are becoming larger issues. The problem is, sincerity and commitment cannot be quantified.

GLOBAL from page 73

Both the UX43 and UX44 systems are compatible with IBM's DOS/VS, DOS/VSE, MVS, VSE, VM and MVS operating systems, according to the company.

The price of a UX43 with 4M bytes of main memory is \$150,000 for purchase or \$7,300 for a two-year lease, the vendor said.

The price of a UX44 with 8M bytes of main memory is \$215,000 for purchase or \$10,330 for a two-year lease.

More information is available from Global-Unionec Systems, which is located at 2902 Orchard Pkwy., San Jose, Calif. 95134.

FILENET from page 73

Prices for OEMs range from \$65,000 to \$80,000 per unit, based on the quantity purchased, the vendor said. Initial OEM shipments are scheduled to start in November, and volume shipments will begin in January, the company said.

The Gear is the first product from Filenet.

More information is available from Filenet at 3530 Hyland Ave., Costa Mesa, Calif. 92626.

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MICROCOMPUTERS

DEC refocusing micro policy on vertical marts

By Paul Karaszewski
CI Staff

Digital Equipment Corp.'s Rainbow did not produce a pot of gold. Neither did the DEC Professional nor the Decmate, and the world's second-largest computer manufacturer is altering its microcomputer marketing plans, according to industry observers interviewed by *Computerworld*.

With the introduction of the Rainbow, DEC hoped to become one of the three major microcomputer producers, joining Apple Computer, Inc. and IBM. "At that time, the window of opportunity was open, and DEC believed it could climb in," a former employee said.

But that did not happen. "DEC's products were never a success in the retail market," said Kevin C. Blaker, owner of Long Beach Micro, a retail store that until recently carried only DEC microcomputers. "With IBM's recent announcements, they would have been even less successful."

Analysts cited a number of reasons why DEC failed to become one of the big three: Its products were delivered later, pricing was too high; DEC never developed clear channels of distribution; the microcomputers lacked software; and DEC's marketing was ineffective.

"DEC's microcomputers were approximately a year late for delivery," noted Sonny Monosson, publisher of the newsletter, "Monosson on DEC." "That made it impossible for the company to compete with IBM. The market standard had already been established."

The standard was set as software developers chose to write for the IBM Personal Computer rather than for DEC's microcomputers, said Stephen Smith, security analyst at Paine, Webber, Jackson & Curtis, Inc. "There has never been a lot [of] software available for the machines," the analyst said.

The lack of clear channels of distribution also contributed to DEC's problems,

according to Monosson. "When a company announces three machines at one time, it must have distribution plans for each machine," the publisher said. "DEC never established clear channels of distribution."

However, Long Beach's Blaker discounted DEC's distribution planning problems. "The customer does not care about how a product reaches a store, as long as it is displayed on the floor," Blaker stated. "DEC's problem was that it decided to stop advertising. When the company spent money last Christmas, our sales increased. This spring, advertising was cut, and sales slumped. The product could have stood on its own merit, but DEC did not have that tidbit of information to the public."

Consequently, DEC has consciously decided to alter its marketing niche. "DEC is out of the commodity market with its high discounts and mail-order buying," acknowledged John O'Keefe, marketing manager for DEC's Business Computer Group.

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MICRO BITS
Thomas W. Madron

Mainframes get micro treatment

Recently introduced communications users in large microcomputer users in large organizations to use the mainframe's disk storage capacity as a virtual disk peripheral.

Such packages run at both the micro and the mainframe end of the connection. At the micro end, the software overlays the operating system and adds what appears to be another disk drive to the system. When a file is written to or read from that virtual disk, the data goes up a communications line to the mainframe.

On the mainframe end, the data is captured and saved in what appears to be a format compatible with the micro's operating system. Additional mainframe utilities may allow the transfer of information from the mainframe's data base system to the micro's virtual disk or vice versa.

The advantage of this arrangement is that the mainframe system will offer very large amounts of disk space, along with standard procedures to back up and protect the data — a constant problem for microcomputer users. Such products, destined to become important in MIS planning for large organizations, demand the active cooperation of the central computing facility.

One such communications product, Tempus-Link from Micro Tempus, Inc. of Montreal, illustrates some of the kinds of data transfers that might be useful. These can work between micro and virtual disks, between virtual disks and

See VIRTUAL page 84

Madron is manager of computer services at North Texas State University, Denton, Texas.

Suppliers help users choose micro software

By Paul Karaszewski
CI Staff

How can an MIS manager find the needle — the best package — in the haystack of microcomputer software?

One route is through a new type of software supplier that assists managers by offering software evaluations, training, newsletters and technical expertise.

In return for these services, Corporate Software, Inc.; Management Science America, Inc.'s (MSA) Micro Distribution Division; Management Information Software Co.; and One Point sell that large companies purchase microcomputer software through them rather than from a retailer or a vendor.

The driving force in this evolution is dissatisfaction with present distribution channels, according to Howard A. Smith, senior vice-president at MSA's Micro Distribution Division, located in Santa Monica, Calif. "A year and a half ago, our company completed a study which found that corporate buyers were unhappy with the

See SUPPLIERS page 83

Sorcim introduces 'Easyplus' package for IBM micros

SAN JOSE, Calif. — Sorcim/IBM Micro Software has introduced the Easyplus software package, said to provide windowing for the firm's Easybusiness series of productivity and accounting programs and for its Plus Series enhancements to Easywriter II, Easyfiller and Easyplaner software.

The Easyplus software, for the IBM Personal Computer and Personal Computer XT, reportedly establishes and supports up to 10 windows on the screen simultaneously and allows transfer of data from one application window to another. The software also is said to include a macro function called Easykeys that shortcuts repetitive tasks.

Easyplus reportedly offers a Help facility that can operate as a window allowing users to access accounting and productivity applications. Easyplus also allows several windowed applications to use the same data base and permits single applications to be displayed simultaneously in several windows for use and reference, according to Sorcim.

See SORCIM page 84

VCN launches 'EV Capture Plus' software

CAMBRIDGE, Mass. — Software that provides an interface between eight popular color printers and application programs running under Microsoft Corp.'s MS-DOS on the IBM Personal Computer and Personal Computer XT has been introduced by Visual Communications Network, Inc. (VCN).

The software, called EV Capture Plus, also reportedly allows users to transfer graphics, images and text from several applications programs to the vendor's VCN Execution environment for enhancement. VCN Execution is said to be a presentation graphics software package that permits the combination of text, charts and other graphics items.

EV Capture Plus permits any MS-DOS application program to be sent to the eight printers or incorporated into VCN Execution, the company claimed.

Among the color plotter and printers driven by EV

Capture Plus are the IBM Color Printer; Quadrum Corp. Quadrum; Epson America, Inc. MX-80/100 and FX-80; and Xerox Corp. Diablo Inkjet.

Capture function

Users can take advantage of EV Capture Plus's capture function to interrupt a program and transfer the image of a graph to be printed or stored on a disk in the Execution format, according to Visual Communications.

EV Capture Plus operates in single- or dual-byte mode drive configurations and requires 34K bytes of memory.

EV Capture Plus is priced at \$125.

Additional information is available from Visual Communications Network, 236 Main St., Cambridge, Mass. 02142.

MICROCOMPUTERS

Study: 50% of small businesses will use micros by '87

Financial analysis, spreadsheets seen as most popular applications

NEW YORK — Almost half of all U.S. small businesses will be using microcomputers by 1987, according to a study conducted for Pronto, Chemical Bank Corp.'s home banking and information system.

Nearly one-third of 1,531 small businesses surveyed reported that they currently own and use microcomputers, while 48% said they will be using them by 1987.

Pronto said the most commonly used small business applications are financial analysis and spreadsheets. Those applications were used by 66% of the respondents, followed in popularity by general ledger at 66%, accounts payable at 60% and word processing at 56%.

One-third of those surveyed said that when adding applications they would probably subscribe to an on-line personal computer-based banking and information system, according to a spokesman for Pronto, which markets a home banking service throughout the U.S. and earlier this year announced a similar small business service scheduled for 1986.

Benefits

Those businessmen who said they probably would use on-line microcomputer banking cited as benefits better cash-flow management (68%), more control over money (67%), the ability to manage money for best return (53%), up-to-date account

information and time savings.

The study also revealed that 94% of the businessmen would like an on-line system to include payroll preparation and bill paying, while 29% would like drawing down or paying on a line of credit and 26% would like to see worksheet financial management.

The study, the results of which are available to potential Pronto loanee banks, was intended as a market test for Pronto. It was conducted by the New York research firm of Schulman, Kneass and Bucuriale, which surveyed the chief financial officers at a number of U.S. businesses with annual sales revenues between \$500,000 and \$10 million, according to the firm.

Breakthrough offers project management software for IBM micro

NOVATO, Calif. — Breakthrough Software Corp. has joined the growing number of vendors offering microcomputer project management software with Time Line, a package designed for an IBM Personal Computer running IBM's PC-DOS operating system.

The software reportedly computes schedules and represents them as Gantt or PERT charts. The schedules are said to account for the project's critical path, resources available, priorities, calendar dates, task overlaps and delays, according to a spokesman

for the vendor.

Time Line reportedly allows managers to break a project into phases, work with each phase and combine items into summary information. With Time Line, a user can track multiple cost categories and analyze relationships between costs and resources.

When entering data, the user is allowed to note that a project can be scheduled as late or as early as possible, the spokesman said.

Managers can work back from a target to devise a schedule. "Most

managers are assigned a date and forced to meet it," said William Lohse, Breakthrough Software's president. "We tried to design the product so it resembled real-world situations."

Experts data

The Time Line program exports data to a number of packages, including Lotus Development Corp.'s 1-2-3, Sorcim Corp.'s Supercalc III, VisiCorp's Visi Calc, Microsoft Corp.'s Multiplan, Ashton-Tate's Dbase II and Micropro International Corp.'s

Wordstar, according to the vendor spokesman.

Time Line can load approximately 300 tasks in 256K bytes of random-access memory (RAM) and 1,000 tasks in a microcomputer with 512K bytes of RAM, the vendor spokesman said.

The Time Line package is priced at \$390, according to the spokesman for the vendor.

More information is available from Breakthrough Software, which is located at 505 San Marin Drive, Novato, Calif. 94947.

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MICROCOMPUTERS

SOFTWARE

CHASE ECONOMETRICS
PC Planner

Chase Econometrics has introduced PC Planner, which reportedly makes Chase Econometrics' data base of economic and financial information available to the company's clients equipped with 256K-byte IBM Personal Computer XT's.

PC Planner reportedly integrates mainframe access with spreadsheet, graphics, data base management and word processing modules. Under PC Planner, users can access and download Chase Econometrics historical and forecast data, review or analyze the vendor's forecast information, develop projections and scenarios and prepare graphics for presentations, according to Chase.

PC Planner is priced at \$6,000, exclusive of hardware and data access fees.

Chase Econometrics, 150 Monmouth Road, Bala-Cynwyd, Pa. 19004.

GLOBAL SOFTWARE
CONSULTANTS, INC.
Taskmanager

Global Software Consultants, Inc. has introduced Taskmanager, a maintenance and inventory control program for production and facility management applications, which operates on the IBM Personal Computer and Personal Computer XT and on microcomputers running under the Digital Research, Inc. CP/M 2.2 operating system.

Taskmanager reportedly produces work orders and reports on equipment showing maintenance time, status, costs, standard life expectancy and scheduled and unscheduled maintenance histories. It also features inventory control modules and reflects the material transactions of day-to-day maintenance activities, Global said.

In addition, Taskmanager reportedly generates reorder reports, material activity reports, vendor usage reports and other management reports. It is leased at \$695 per year.

Global Software Consultants, 307 4th Ave. S., P.O. Box 15436, Minneapolis, Minn. 55415.

GREENLEAF SOFTWARE, INC.
Greenleaf Functions 2.0

Greenleaf Software, Inc. has enhanced Greenleaf Functions 2.0, a library of C language functions running on the IBM Personal Computer.

The enhancements added 15 functions to the original product and were written in assembly to speed execution, Greenleaf said. The tools reportedly include routines for video, graphics, color text, keyboard, equipment access, system interface and diagnostics.

Greenleaf Functions includes an example of the product's use, demonstration diskettes, source code, reference card and a newsletter.

Greenleaf Functions costs \$175. Greenleaf Software, 2101 Hickory Drive, Carrollton, Texas 75006.

ECONOMIC SCIENCES CORP.
EMS for XT/370

Economic Sciences Corp.'s EMS corporate planning support software is now available for IBM's Personal Computer XT/370.

EMS integrates financial, economic modeling, forecasting, report writing and data base management functions to develop applications such as sales forecasting, market analysis and financial analysis, Economic Sciences said. Applications developed on the XT/370 can be ported to IBM mainframes, the vendor said.

EMS data base management system is self-contained and allows reports and data to be stored together rather than on separate disk files.

EMS prices range from \$7,500 to \$13,500.

Economic Sciences 2150 Shattuck Ave., Berkeley, Calif. 94704.

CASCADE GRAPHIC
DEVELOPMENT, INC.
3-D Scribe

Cascade Graphic Development,

Inc. has announced 3-D Scribe, a graphics package that runs on the IBM Personal Computer.

The package reportedly was designed to help architects and draftsmen determine how to lay out a building. The software generates three-dimensional perspectives, isometrics and elevations, a spokesman said.

3-D Scribe is said to support hidden-line removal. With the product, architects can determine where to place doors and windows so that they can best utilize the sun, according to the vendor. The product requires 192K bytes of random-access memory and the IBM graphics card.

3-D Scribe costs \$2,000, according to the vendor.

Cascade Graphic Development, 1000 S. Grand Ave., Santa Ana, Calif. 92705.

TEKTRONIX, INC.
Structured Analysis Tools

Tektronix, Inc. has announced Structured Analysis Tools, a software development system that runs on the Tektronix 8500 microcomputer development system and Digital Equipment Corp. line of VAX-11 superminicomputers.

Graphics editing, error checking and data output analysis techniques provide a structured programming path from source code through debugging phases, Tektronix said. The package determines front-end system and software requirements, according to the vendor. Structured Analysis Tools reportedly can be used in four areas: graphics diagram editing, internal consistency checking, error correcting and formatting analysis for output.

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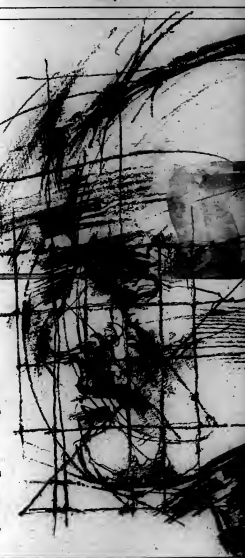
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MICRO-COMPUTERS

The product includes a graphics editor that allows the rapid entry and modification of data flow diagrams and automatically formats the diagram so that it conforms to accepted structured analysis notations, according to the vendor.

Structured Analysis Tools is priced at \$9,500.

Tekavac, P.O. Box 1700, Beaver-ton, Ore. 97007.

DECISION RESOURCES, INC.

Chart Master, Sign Master enhancements

Decision Resources, Inc. has enhanced its Chart Master and Sign Master graphics packages so they support Polaroid Corp.'s Pallette, Hewlett-Packard Co.'s 7550 plotter, IBM's 7371 and 7373 plotters and the IBM color graphics printer.

With the software, which runs on an IBM Personal Computer, users can select up to 10 of the Pallette's 73 colors and create aliases that possess twice the resolution of the microcomputer's screen, the vendor said.

Another addition to Chart Master is an enhanced interface to Victory's Vial Calc and Lotus Development Corp.'s 1-2-3. Sign Master reportedly now can make global changes to text and allows the user to verify changes before they are printed.

Chart Master costs \$375; Sign Master sells for \$245.

Decision Resources, 25 Sylvan Road S., Westport, Conn. 06881.

DECISION SUPPORT SOFTWARE, INC.

Expert Choices

Decision Support Software, Inc.

has announced Expert Choice, a decision support tool that runs on the IBM Personal Computer equipped with IBM's PC-DOS operating system and 128K bytes of random-access memory.

Expert Choice reportedly provides a structured approach to addressing, organizing and communicating decision-making processes. The product allows the user to portray a complex problem in hierarchical form and focus attention on specific parts of a problem, Decision Support Software said.

The product can aid strategic planning, employee evaluation and product selection, according to the vendor. Expert Choice is said to use three principles of analytic thinking: hierarchical organization, establishing priorities and logical consistency.

Expert Choice costs \$485, accord-

ing to the vendor.

Decision Support Software, 1900 Vincent Place, McLean, Va. 22101.

EMERGING TECHNOLOGY CONSULTANTS, INC.

Professional Writer's Package

Emerging Technology Consultants, Inc. has announced Professional Writer's Package, which bundles four Emerging Technology Consultants products: Edit, Wordix, Spellix and Index.

Edit, a text editor, features windowing text manipulation of up to 12 files at once, according to the vendor.

Wordix, a document formatter, reportedly includes multiple column output, automatic footnote placement, automatic section numbering, mail-merge capabilities and user macro programming capability.

Spellix is a 43,000-word spelling checker, the vendor said.

Index is said to generate comprehensive, two-column alphabetical indexes of words, phrases, concepts and page references.

The programs run on IBM's Personal Computer, Texas Instruments Inc.'s Professional and Digital Equipment Corp.'s Rainbow.

Professional Writer's Package costs \$480; each package sold separately costs \$145.

Emerging Technology Consultants, 3031 Broadway, Boulder, Colo. 80302.

XYLAX CORP.

Zynder 1.2

Zylix Corp. has enhanced its Zynder software, which provides full text search of information stored on hard disk or diskette systems.

Enhancements provided with Zynder 1.2 include compatibility with all MS-DOS-based word processors, including Micropro International Corp.'s Wordstar and Microsoft Corp.'s Microsoft Word. Zynder said that Zynder 1.2 is now compatible with Wang Laboratories, Inc.'s Professional Computer, Digital Equipment Corp.'s Rainbow, HCR Corp.'s Decision Mate V, ITT's Xira, Smith Data Systems, Inc.'s 150, Sperry Corp.'s Personal Computer and other machines.

Zynder reportedly also offers foreign language capability and an option for file-only searches.

Zynder is priced at \$145 in a version capable of handling 1,500 files. A version said to be capable of handling 15,000 files is priced at \$325.

Zylix, 253 E. Erie, Chicago, Ill. 60611.

MANAGEMENT CONTROL SYSTEMS, INC.

Tax 1040 for Personal Computer XT

Management Control Systems, Inc. (MCS), a division of Informatics General Corp., has introduced a version of its Tax 1040 software for the IBM Personal Computer XT. The program had previously been offered on the IBM System/23, 34 and 38.

Tax 1040 reportedly prepares Form 1040 and accompanying forms and schedules and permits data to be entered and printed in minutes. The package allows accountants to enter tax information for hundreds of clients, includes state tax programs for 22 states and features a flag screen accessed by a single key, according to the vendor.

Continued on page 89



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MICRO-COMPUTERS

Continued from page 88

It also reportedly can print review copies of client returns immediately or put them in a print queue for later printing. The package is said to transfer tax return preparation charges automatically to the vendor's accounting practice management software for billing.

Furn 1040 is priced at \$2,500 in its federal version and between \$400 and \$2,000 for state tax versions.

Management Control Systems, P.O. Box 725597, Atlanta, Ga. 30329.

APPLICATION INNOVATIONS, INC.

MegaSort

Application Innovations, Inc. has introduced MegaSort, a binary sort routine for the IBM Personal Computer, Personal Computer XT or PCjr.

MegaSort can be used to sort floppy or hard disk files and was designed for hard disk drive sorting, the vendor said.

MegaSort reportedly features the ability to read any file from a user-specified drive, sort data using temporary files and rewrite original files.

MegaSort is priced at \$76 with documentation.

Application Innovations, 1550 Old W. Henderson Road, Columbus, Ohio 43220.

SYSTEMS

HABA SYSTEMS, INC.

HabaMerge; HabaTemplates

Haba Systems, Inc. has announced

HabaMerge, a form letter and mailing label program, and HabaTemplates, a set of data base and spreadsheet templates, each running on Apple Computer, Inc.'s Apple II and Apple III microcomputers.

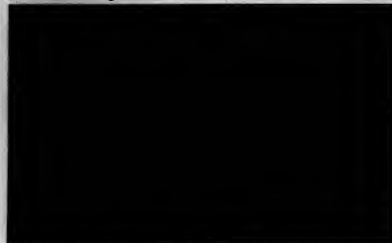
HabaMerge allows a user to merge data base and word processing files and create custom form letters or mailing lists, according to a vendor spokesman. The purchaser reportedly can merge either a complete file or part of a file.

HabaTemplates provides 54 applications such as sales and expense analysis, profit and loss analysis, scheduling and time management, the vendor said. The templates reportedly can be customized by users.

HabaMerge costs \$69.95; HabaTemplates sells for \$29.95.

Haba Systems, 15154 Staggy St., Van Nuys, Calif. 91405.

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AUTO TELL SERVICES, INC.

Maintenance system

Auto Tell Services, Inc. has announced a maintenance management and spare parts inventory control system that runs on an IBM Personal Computer XT.

The turnkey system reportedly was developed for industries such as hospitals, colleges and other institutions that use IBM Personal Computers. The system is said to cut costs by 5% to 20%, with increased direct labor productivity, improved maintenance, mechanic breakdowns and reduced scheduling time.

The system answers questions concerning machine performance, manpower effectiveness and spare parts availability, Auto Tell said.

The turnkey system is priced at \$20,000.

Auto Tell Services, P.O. Box 1550, 600 Clark Ave., King of Prussia, Pa. 19406.

ALTERTEXT, INC.

System I, System II price cuts

Altertext, Inc. has announced enhancements to and price reductions for its Altertext System I and System II disk conversion mechanisms, which can work as personal computers. System I and System II reportedly format data files so they can be used by incompatible personal computers, word processors and typesetting machines.

System I now is equipped with two 5¼-in. and one 5-in. disk drive, so it can transfer data between incompatible 5¼-in. drives. Altertext said. The price of System I was reduced from \$12,000 to \$7,500.

The price of System II, which includes two 5¼-in. and two 5-in. drives, has been cut from \$20,000 to \$15,000, according to the vendor.

Communications capabilities, priced at \$1,500, were added to the system so that users can establish a five-person network.

A hard disk, which costs \$2,500, is now available for both systems.

Altertext, 210 Lincoln St., Boston, Mass. 02111.

COMMUNICATIONS

AMERICAN TELEPROCESSING CORP.

ATC Protocol

American Teleprocessing Corp. has introduced ATC Protocol, a hardware/software communications package designed for the IBM Personal Computer and Personal Computer XT.

Protocol reportedly offers the ability to use other software without interruption while messages are being sent and received. The package's automatic Send command is said to provide the ability to queue messages for later transmission. Protocol also reportedly offers unattended sending and receiving, real-time communications and the ability to use electronic mail and direct-distance dialing.

It also can communicate in full or half duplex, American Teleprocessing said.

Protocol is priced at \$995. American Teleprocessing, 10681 Haddington Drive, Houston, Texas 77042.

See TMA page 91

BOEING COMPUTER SERVICES

MICROCOMPUTERS

TALK from page 80

MICRO-SYSTEMS SOFTWARE, INC.

M-Term

Micro-Systems Software, Inc. has introduced M-Term data communications software for the IBM Personal Computer; Radio Shack TRS-80 Models I, II, 4 and 16; Zenith Data Systems Corp. Z-110; and Apple Computer, Inc. Apple II.

M-Term is said to permit binary file transfers among supported systems and handles 0-300 and 1,500 bit/sec transmissions. It also can directly transmit between systems at 8,000 bit/sec and supports intelligent and other forms of intelligent modems, the vendor said.

M-Term can support unattended electronic mail applications and has a macro key to allow users to define log-on sequences of up to 64 characters each for up to 10 systems. M-Term is priced at \$79.95.

Micro-Systems Software, 4501-18 Oak Circle, Boca Raton, Fla. 33431.

BRAEGEN CORP.

Elan/PC

Braegen Corp. has introduced Elan/PC, a direct channel interface board that enables IBM Personal Computers to communicate with host computers over a local-area network.

Elan/PC provides Personal Computers and compatibles with the capabilities of an IBM 2321C terminal, the vendor said. The interface connects directly to the Braegen Elan coaxial network and communicates to any Braegen 3270-compatible 8000 series controller.

Elan/PC provides access to both local and remote host computers and can access data residing in a distant mainframe via a Braegen remote controller on the network, according to the vendor. It is priced at \$995.

Braegen, 535 Lee Cooke St., Milpitas, Calif. 95053.

SOFTRONICS, INC.

Softform PC

Softtronics, Inc. has announced Softform PC, a communications program for the IBM Personal Computer. The product reportedly functions as either a stand-alone program or an extension of IBM's PC-DOS operating system. Softform PC can access information services, bulletin boards, electronic mail systems and mainframes, Softtronics said. The product is said to feature keyboard macros, a built-in telephone book for automatic dialing and concurrent processing capabilities.

Softtronics emulates a number of terminals, including Hewlett-Packard Co.'s 2622A, Digital Equipment Corp.'s VT55 and VT102 and IBM's 3101 Model 10.

Softform PC costs \$295. Softtronics, Suite 10, 9539 New Otwell Road, Memphis, Tenn. 38118.

FORMULA CONSULTANTS, INC.

Super/PC

Formula Consultants, Inc. (FCI) has announced an advanced version of its synchronous UTS protocol emulation routine for IBM Personal Computer-compatible systems.

Super/PC enables a microcomputer to communicate with a Sperry

Corp. 1100 series mainframe at speeds up to 9,600 bit/sec, Formula said. The new version of the software reportedly supports 20 independent programmable function keys, on-line Help screens, improved file transfer capabilities, foreign language support, full printer function support and the ability to view two independent logical screens on one physical screen.

The new version allows the user to exit the emulation software, manipulate data under Microsoft Corp.'s MS-DOS and return to the emulation mode without losing the host connection. A diagnostic tool is included to help the user with terminal and line error analysis, the vendor said.

The price for all Super/PC systems is \$295.

Formula Consultants, P.O. Box 544, Anaheim, Calif., 92705.

CXI, INC.

3270 PC Connection

CXI, Inc. has announced an add-on interface board and software said to provide micro-to-mainframe communications for IBM Personal Computers and compatibles.

The 3270 PC Connection reportedly emulates the functions of the IBM 3270 Personal Computer and allows Personal Computer users to alternate between host and Personal Computer applications, transfer data to and from the host and interact with several host applications concurrently.

It is available with a coaxial connection for attachment to IBM 3274 cluster controllers and a modem connection for remote attachment emulating a 3274. It is priced at \$1,595.

CXI, 3695 W. Beaugard Road, Palo Alto, Calif. 94302.

LEE DATA CORP.

PC Adapter

Lee Data Corp. has announced the 2801 PC Adapter, which reportedly allows IBM Personal Computers to interface with Lee Data's line of system controllers.

The 2801 PC Adapter reportedly plugs into an expansion slot on the Personal Computer, Personal Computer XT and compatibles and allows Personal Computer users to use Lee Data's file transfer utilities. Those utilities allow partial or complete files to be transferred between the Personal Computer and host IBM computers.

The 2801 PC Adapter is priced at \$1,150.

Lee Data, 7075 Flying Cloud Drive, Minneapolis, Minn. 55344. See W&E page 92.

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MICROCOMPUTERS

TALK from page 91:

NOVATION, INC.
Cat Communication System

Novation, Inc. has announced Cat Communication System, a line of stand-alone and internal modems that work with several micros.

Cat Communication System includes menu-driven software that provides error-checking file transfer protocols, Novation said. The product reportedly includes Novation's Smart-Cat Plus, a 300 or 1,200 bit/sec modem that recognizes commands for Hayes Microcomputer Products, Inc.'s Smartmodem. Features include dial-tone detection, busy signal detection with automatic alternate number dialing and automatic dial mode selection, the vendor said.

The product works with a number of microcomputers, including Digital Equipment Corp.'s Rainbow; IBM's Personal Computer, Personal Computer XT and PCjr; and Personal Computer-compatible machines.

The systems are priced at \$490. Novation, Box 8875, 20409 Providence St., Chatsworth, Calif. 91311.

PERSOFT, INC.
Smartterm 400

Persoft, Inc. has introduced an asynchronous communications package, Smartterm 400, that allows an IBM Personal Computer to emulate IBM General Corp. Dealer D100, D300 or D400 terminals.

Smartterm allows the user to transfer Ascii and binary programs or data files between the Personal Computer and a DG mainframe, Persoft

said. The product reportedly features a software function, an extended command sequence that allows the host to control Smartterm remotely and a start-up sequence for automatic file transfer with a remote data base.

Smartterm 400 costs \$140. Persoft, 2740 Shi Lane, Madison, Wis. 53713.

CXI, INC.
3278/79 Plus PC Connections

CXI has announced 3278/79 Plus PC Connections, two boards with software for IBM Personal Computers and compatibles that provide 3278 and 3279 terminal emulation as well as some of the 3270 Personal Computer's capabilities.

The 3278/79 Plus, available either as a coaxial connection to IBM cluster controllers or as a modem for remote

IBM 3274 controller emulation, is said to provide instant screen updating and file transfer capabilities, including data encoding and compression. The product also reportedly features batch file generation capabilities for the successive execution of multiple file transfers.

It also provides windowing capabilities that allow the user to view a host session, an IBM PC-DOS session and two notepad sessions, the vendor said.

The 3278/79 Plus PC Connections cost \$1,145 each.

CXI, 5004 W. Sageshore Road, Palo Alto, Calif. 94303.

PRINTERS/PLOTTERS/
PERIPHERALSALPHACOM, INC.
Alphapro Traveler

Alphacom, Inc. has introduced a daisy-wheel printer, Alphapro, and a portable printer, Traveler.

Alphapro prints 16 char./sec and supports proportional spacing, bold-face, double strike, strikethrough, phantom space, superscript, subscript and reverse line feeds, Alphacom said. Operator commands reportedly include line feed, testing, set top of form, set hammer intensity, reset, pause and form feed. The product features a 96-byte buffer that can be expanded to 4K bytes, the vendor said.

Traveler is an 80-col., 54-lb., 60 char./sec thermal printer designed for battery-powered portable computers, Alphacom said. Traveler's batteries reportedly permit printing of 100 pages of text.

Alphapro costs \$399.95. Traveler is priced at \$109.95.

Alphacom, 8323 S. Bascom Ave., Campbell, Calif. 95008.

STEARNS COMPUTER SYSTEMS
Monochrome graphics board

Stearns Computer Systems has introduced a monochrome graphics board and provided color graphics capability for its desktop computer, an IBM-compatible unit based on the Intel Corp. 8086 processor.

The monochrome graphics board provides resolution of 720 by 348 pixels, Stearns said. It also reportedly offers a 26-row by 80-char. display, making the soft function keys of the desktop available for storing repetitive keystrokes and customizing programming applications.

Color graphics capability for the desktop consists of a color monitor and color graphics board and connections. The monitor reportedly features 16 colors, resolution of 640 by 200 pixels and neoprene, dark glass faceplate.

The monochrome graphics board is priced at \$696. The color graphics system costs \$1,590.

Stearns Computer Systems, P. O. Box 8884, 10901 E. Bryn Road, Minneapolis, Minn. 55440.

NICOLET INSTRUMENT CORP.
Zeta Sprint

Nicolet Computer Graphics Division of Nicolet Instrument Corp. has added a 6-pen plotter with RS-232C or parallel interface to its line of digital plotters.

Aimed at the microcomputer market, Zeta Sprint is said to provide

Continued on page 98

MULTIMATE, IBM IN SYNC WITH WANG! FORMSCAN BREAKS THE LANGUAGE BARRIER.



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MICROCOMPUTERS

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service provided by retail stores, health declined. "Many retailers had been selling services and had not understood corporations."

MSA's findings were echoed by a Management Information Software customer, Neil Cookrich, product manager at Business Trust Co. in New York. "When our software packages were unavailable, a number of users were getting burned," Cookrich explained. "We looked at a number of retailers, but they did not possess a broad knowledge of product capabilities as [Management Information Software] did."

Each software supplier employs a technical staff through which to filter microcomputer packages, with the number of full-time technicians varying from five to 15, according to the companies. "We evaluate approximately 10 packages a week," said Marc Rosenthal, chairman of Corporate Software, located in Waltham, Mass.

The technicians' findings are disseminated in several different ways. Corporate Software publishes a guide that lists all its findings. MSA completes an on-site evaluation of needs and recommends solutions. One Point, located in Walnut Creek, Calif., allows users to dial in to an electronic catalog that contains evaluations of 5,400 packages. Management Information Software and Corporate Software supplement this type of information by publishing newsletters.

Users found the suppliers' evaluations particularly helpful when searching for obscure packages. One New York bank buys many popular packages such as Lotus Development Corp.'s 1-2-3 and Multibase Systems, Inc.'s Multibase directly from the manufacturer. "If we need an expensive, vertical package, we are sure that [Management Information Software] will locate one, evaluate it and provide support for it," the bank's microcomputer administrator reported.

Corporate Software plans to expand its software offerings from approximately 80 titles to 300 by the end of the year, with vertical packages accounting for most of the additions. "We've found that corporations need very specialized packages, and those needs are often ignored," Rosenthal stated.

Once the suppliers recommend a package, buyers require hands-on evaluations, which are provided in a number of ways. Management Information Software, One Point and MSA hold monthly product seminars. "In addition to working with the product, I was able to question a company's technical support person," Cookrich said. MSA, Corporate Software and Management Information Software offer 30-day evaluation copies of software.

Training is another service offered. MSA offers two types of training: One is a program for first-time users; the second teaches how to work with a particular program. Management Information Software holds training sessions for microcomputer managers, who train end users.

Suppliers claimed to provide quick delivery of a product, and users verified some of these claims. "There was a time when [Management Information Software] hand-carried the software to us because they knew we needed it," Cookrich stated.

Continued from page 32

graphics hard copy from a variety of computers and software programs, including Lotus Development Corp.'s 1-2-3 and Sorcin Corp.'s Supercalc.

Right-clickable software rates are reportedly provided through the MS-232 interface. Cut-sheet media of 84 in. by 11 in. and 11 in. by 17 in. are supported, according to the vendor.

State Sprint costs \$1,548.
Norbit, 8225 Swamp Road, Medford, N.J. 07041

RAYES MICROCOMPUTER PRODUCTS, INC.

Smartcom II 2.0

Rayes Microcomputer Products, Inc. has released Smartcom II 2.0, an upgraded version of its telecom communications software.

According to the company, the new software emulates Digital Equipment Corp. VT33 and VT100/104 terminals and includes the Xmodem protocol. It also allows terminals to transmit data automatically to Smartcom and Smartcom II 2.0 users at preset times.

The new version is said to require 128K bytes of retrievable random-access memory (in addition to that required by the operating system), one disk drive and an 80-cm monitor.

Smartcom II 2.0 is said to protect passwords, to test modems without going on-line and to let users switch from voice to data transmission during one phone call.

The software sells for \$140, according to the vendor.

Rayes Microcomputer Products, 5555 Foxwood Industrial Blvd., Norcross, Ga. 30062.

FORTE DATA SYSTEMS, INC.

Porta-Graph monitor

Forte Data Systems, Inc. has added a color monitor to its Porta-Graph line of micro-to-mainframe graphics products.

Used with the Porta-Graph board and associated software, the Porta-Graph monitor reportedly allows mainframe graphics to be displayed on an IBM Personal Computer and gives the resolution of an IBM 3270 graphics terminal.

The Porta-Graph monitor includes a 14-in. diagonal display, 31-dot pitch, an IBM Personal Computer, red, blue and green interface and 800-by-600-pixel effective resolution.

The monitor costs \$995.
Forte Data Systems, 2505 Portview Drive, San Jose, Calif. 95121.

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MICROCOMPUTERS

SORCIM

from page 85

according to the vendor.

Easyplus is priced at \$95. Although 256K bytes of internal storage is the minimum required, 512K bytes is recommended. The Plus Series programs are priced as follows: Easywriter II, \$395; Easyfiler, \$400; Easyplanner, \$250. The Easybusiness System, a group of packages for applications from general ledger and financial reporting to order entry and payroll, is priced ranging from \$595 to \$745.

Users who previously bought programs that are now included in the Plus Series can upgrade to the Plus Series at \$50 per program module.

More information is available from Sorcim/IUS Micro Software, which is located at 2195 Partime Drive, San Jose, Calif. 95131.

DEC

from page 85

"DEC is not looking to industry-standard solutions, such as selling (Lotus Development Corp.'s) 1-2-3 on a Rainbow. Rather, we are looking for packages, such as job costing, that can solve a problem for a small business."

DEC is looking to its strongest areas, the engineering and scientific markets, according to Smith. "DEC gambled and lost in its initial announcement," Smith said. "It was an expensive lesson, but the company has learned and is moving back to its traditional strong points: direct sales and OEM agreements."

The effect of this refocusing on DEC's micro line is unclear. "The Rainbow is DEC's industry-standard machine that allows customers to use popular products that run on an IBM (Personal Computer)," Smith said.

"The Decade will remain as the company's word processing system. The Professional is being pressured by DEC's new, low-end multuser systems like the Micro PDP-11. The Professional may be phased out."

Balser offered a different scenario: "There haven't been any significant developments for the Rainbow in approximately a year. DEC may put an Intel Corp.'s 8086 chip in the Decade and drop the Rainbow—even though it is the company's best product. DEC is stubborn, so it will probably keep the Professional."

In either case, it seems that DEC is moving away from single-user and toward multuser micro systems, Smith said. "DEC can focus its attention on workstations with sophisticated advanced graphics systems. . . DEC lost in the short term, but should be successful in the long run."

VIRTUAL

from page 85

mainframe files and data bases and between micro and mainframe files and data bases.

A companion product to Tempus-Link is the firm's Tempus-Data, described as "an open-ended data management system that allows nontechnical users to select, extract and update mainframe data from the familiar microcomputer environment." One of the strengths of Tempus-Link is ready access to a number of popular IBM mainframe data base systems: IBM's IMS/OLI; Collins Software, Inc.'s IDMS; Cincos Systems, Inc.'s Total Software AG of North America, Inc.'s Adabas; and Computer Corp. of America's Model 204.

A major disadvantage of the system is that it runs only under CICS and TSO (and, in the future, VM/CMS). These are commonly used IBM mainframe software products that provide 3270-based access to IBM or IBM-compatible mainframes, sometimes called teleprocessing monitors. Unfortunately, none of the independent data base systems such as Adabas and Model 204 usually come with their own teleprocessing monitors. In fact, Complete, a companion product for Adabas, is a very powerful monitor with its own set of data management utilities.

CICS, TSO and Complete operate under OS/VSII, Micro Tempus and vendors of similar products would be well advised to produce a simple, straightforward teleprocessing monitor or be prepared to interface Tempus-Link with a wider variety of monitors.

Managers of a very large number of IBM and IBM-compatible mainframe systems choose not to use the IBM products, largely because of performance problems. The problem with producing a small, simple teleprocessing monitor is that the user may be precluded from accessing data base files organized under a more extensive teleprocessing monitor such as CICS. It is unreasonable to expect potential users to acquire CICS only for the use of Tempus-Link, and many installations discourage TSO now because of the performance limitations.

Pricing will also be a problem for suppliers of such software. The price of Tempus-Link is based on the number of maximum concurrent users. If one buys all the bells and whistles, the total cost for five users is \$13,735, or \$2,747 per concurrent user (although a larger number of users can access the system). For 200 users, the total is \$113,230 and the per-user cost drops to \$566.10.

This type of product probably will become important in large organizations as micros are deployed as workstations and as central systems become primarily data base machines rather than program development facilities. With advances in networking, microcomputing and related technologies, the long-promised move to distributed data processing may become a reality. That environment will accelerate the present demand to make mainframes look more like micros to the end user.



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DIGITAL DISPLAYS THE TERMINALS BEST ENGINEERED FOR BUSINESS.

Before you make any investment in business graphics terminals, it really pays to investigate what you'll be using them for.

If you're like most businesses, your terminals will be used approximately 70% of the time for generating text and numbers. And only around 30% of the time for strictly graphics purposes. The October 1983 *Infosystems* article, "How to Buy Graphics Displays," coauthored by Jim Warner, CEO of Precision Visuals, Inc., states, "While it may be true that one picture (chart, graph) is worth a thousand words, there will always be the need for words, thousands of words, in the day-to-day activity of the office. Special graphics-only devices can have limited value in a general office environment."

At Digital, the first step in engineering every product we make involves a thorough analysis of who will use it, what it will be used for and which features will help make people more productive in their jobs.

That's been true of every terminal we've designed and helps explain their widespread acceptance and popularity.

And you'll find it's equally true of Digital's latest entries, the VT240™ and VT241™ terminals.

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As the newest members of Digital's family of terminals, the VT240, a conversational



text and graphics terminal, and the VT241, with the added

dimension of color, continue the tradition of engineering excellence for performance. They offer full VT100™ compatibility to take advantage of a host of offerings already developed. And to meet the needs of the business environment, you'll find a set of standard text features that are either unavailable on other terminals or may have to be purchased at an additional cost.

These features include bidirectional smooth scrolling, split screen, a choice of 80 or 132 columns per line and a double width/double height format. A highly legible 8 by 10 dot matrix character font displays true ascenders and descenders for exceptional crispness and legibility. If cer-

tain information needs to be highlighted, you can select from a combination of bold print, blinking and underlining in either normal or reverse video. For your added convenience, there's even a built-in printer port for printing hard copy.

Both the VT240 and VT241 terminals give you the option of erasing selected character positions on the screen for more efficient communications and increased productivity. For those applications that require data to be entered by filling in the blanks of a form, once the data has been accepted by the host, the filled-in information—and only that—can be erased by means of a single command. The form itself remains up on the screen and is ready to accept the next data entry sequence.

Beyond this remarkable range of text capabilities, the VT240 and VT241 clearly answer your graphics needs as well.

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The inclusion of a diagram, chart or graph in any report or presentation can immediately transform complex data into easily understandable information.



touchtype, and an editing keyboard and special function keys that reduce the number of keystrokes to complete an operation. Also, the set-up mode offers a menu in plain language (plain English, plain French and plain German) that leads you through each operation in step-by-step sequence.

All this effort has not gone unnoticed. Digital's video terminals received the International Design Award in 1984. The award is based on ergonomic suitability, safety, design quality, practical usability, technical excellence and practical visualization.

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The VT240 and VT241, like every Digital hardware and software product, are engineered to conform to an overall

Both the VT240 and VT241 terminals generate bit map graphics in a choice of two protocols—Digital's ReGIS™ (Remote Graphics Instruction Set) and Tektronix 4010/4014™

choose a box, circle, line, polygon, triangle or arc.

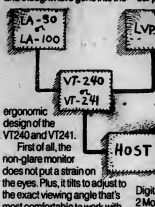
The Tektronix 4010/4014 protocol supports the full array of existing 4010 compatible graphics software. Besides, Tektronix Plot 10,™ TELL-A-GRAF™ and DISSPLA™ from ISSCO™ and DI-3000™ GRAFMAKER™ and GRAFMAS-TER™ from Precision Visuals are also supported.

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ergonomic design of the VT240 and VT241.

First of all, the non-glare monitor does not put a strain on the eyes. Plus, it tilts to adjust to the exact viewing angle that's most comfortable to work with. The detachable keyboard is ruggedly constructed, yet light enough to place on your lap. Even the way the keyboard has been arranged boosts productivity.

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computing strategy. This means our products are engineered to work together easily and expand economically. Only Digital provides you with a single, integrated computing strategy direct from desktop to data center.

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ReGIS lets you create and store business graphics as simply as producing ASCII text. With VAX-11 DECgraph™ and VAX-11 DECslide™ software, even a novice can prepare graphs and charts and turn them into slides. Self-explanatory icons let you

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Working becomes more pleasant, thanks to the non-glare, high-resolution screen and well-defined, smooth scrolling characters. Up to four pages can be stored in display memory, with up to four more pages available as an option.

And all that happens on a 12-inch display that only takes up about one square foot of your desk.

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With eight non-volatile, programmable function keys, it will take you less time to enter complex or repetitive commands. A handy terminal status line tells you what mode you're working in. And

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You get more speed, too. You'll communicate

with your computer at up to 19,200 bps in block, line or character mode. So your information will get around in less time. It's also easy for you to get hard copy, since our terminal has an optional printer port you can install yourself.

If you're an ANSI user, you've also got more going for you. The HP 2392A has ANSI capabilities making it an ideal terminal for your DEC system.

More reliable.

HP engineered the HP 2392A using state-of-the-art VLSI

technology to minimize component count and increase reliability.

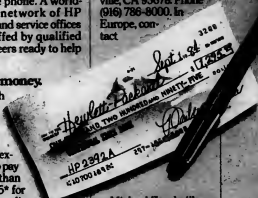
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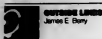
Michael Zandwijk, Hewlett-Packard, Dept. 003199, P.O. Box 529, 1180 AM Amstelveen, The Netherlands.

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COMPUTER INDUSTRY

Employee morale an added benefit of quality circles



OUTSIDE LINES
James E. Berry

Everyone knows about quality circles and the good they do — they do a lot for quality.

But did you know they may also be a great tool for overcoming ethnic problems and building teamwork?

The anticipated payoff for Data-products Corp. is dramatic: increased morale, improved productivity, better quality of goods and services and a reduction in operating costs. Many of Data-products' divisions use key quality assurance programs,

including quality circles, which begin with a training group of 10 or fewer employees. With the guidance of a facilitator and a group leader, members interact to improve the quality of work life, to break down noncooperative relationships between departments and individuals and to break down ethnic barriers.

Improved communication, for example, is a significant result of the firm's Main Line Assembly circle in the Medium-Speed Line Printer Division in the Southern California community of Woodland Hills. With the influx of workers of various nationalities into that department, quality circles have become an effective tool for helping workers understand each

other. Before, employees tended to talk only with others who spoke their native language, whether it was English, Spanish, Vietnamese, Korean, Chinese or Urdu. Now they are communicating with each other, and cultural barriers are crumbling.

A major benefit to be realized from a quality circle is the increase in morale it can create throughout a company. The process is much more than just gathering technical statistics and applying them to problems like the gathering of data. We expect better, solid employee citizens. As employees become more involved with the company and gain a more vested interest, they also gain more of a voice in the operation of the firm.

Quality circles can also result in increased opportunity for advancement and a stronger identification with company goals.

Data-products began training facilitators, group leaders and quality circles starting committee members in March 1983, for implementation of its first quality circle program.

The quality circle steering committee determines the objectives of the circle and establishes operating guidelines for them. Subjects include identification and prioritization of problems that can be improved. The role of the facilitator and group leaders includes training group members in problem-solving techniques with the aid of statistics.

The steering committee consists of members representing most disciplines in the company.

Quality assurance

Quality circles grew out of a general corporate focus on quality assurance. The three areas of quality Data-products are focused on were organization, process and product. Goals were improved customer service and greater productivity. Organizational quality focuses on customer satisfaction, quality of the procedures and systems of customer satisfaction and quality of the products themselves.

Data-products has consciously focused on quality assurance for a long time, but we became much more active in implementing the current programs over the last two years. The way our company did things in the past will not satisfy the requirements of the future.

It is not that we were doing anything wrong. Rather, we were reacting to the rising cost of producing goods, to increasing competition, to cost consciousness and to market demands for zero product defects and 100% on-time delivery. This is due in part to increasing maintenance costs that customers have been absorbing. They want delivery, plug and play — with no intervention on their part.

At the heart of Data-products' push toward greater quality assurance are Dr. W. Edwards Deming's statistical process control techniques. Deming's concept of applying statistics to improve quality and productivity has been applied rigorously by the Japanese since the early 1950s, with amazing results. Process control techniques originated in the U.S. about 50 years ago, but American industry did not listen.

Data-products has a good history of being a quality supplier, but we want to improve even more. The corporation is taking advantage of that fact by changing the way we do business and further improving upon the quality we offer our customers.

The gains we make will determine the market demand for our products. While better employee communication and organizational enhancements are obvious paybacks, the primary measurement of our effectiveness is where it counts the most — with the customer.

Berry is director of corporate product quality for Data-products Corp., headquartered in Woodland Hills, Calif. Data-products manufactures computer printers.

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COMPUTER INDUSTRY

Taxing questions plagued Comdisco's profit margin

ROSEMONT, Ill.—“A big portion of our business . . . that does bring a considerable amount of our profits is the tax-advantaged product that we sell,” Kenneth N. Fontikes, founder and chairman of Comdisco, Inc., said recently during an interview at his suburban Chicago headquarters.

Just how big a portion of the leasing company's profits are derived from putting together tax shelters on computer leases was demonstrated in the dramatic profit decline it experienced over the past three quarters after a negative article in Barron's weekly financial newspaper and an Internal Revenue Service investigation scared off potential investors.

Less than half of Comdisco's revenues (see Figure 4) are derived from simple operational leases (rental), which generally are short-term and do not result in transfer of equipment ownership. Leases in which equipment is transferred to the lessee at the termination of the lease are recorded as equipment sales. But while those two categories generate the major portion of the company's revenues, the company derives a major portion of its profits from leasing services—in which lease proceeds are assigned to a bank after Comdisco takes a net margin for arranging the deal or are written as tax-advantaged transactions.

in which the company resells a lease to an investor while recording profits with little carrying expenses.

After building up to a record profit level of \$18.7 million in the fourth quarter of 1983, Comdisco's profits declined to \$8.7 million in this year's first quarter, \$4.06 million in the second quarter and \$6.9 million in the third.

An article that appeared in Barron's last October questioned the propriety of Comdisco recording profits from tax-advantaged leases in the year the transactions are consummated. It also speculated the company's “net worth . . . would vanish” if equipment out on such leases were to have no residual value at the termination of the lease.

Fontikes asserted that his company is extremely conservative in its accounting practices, and company financial reports audited by Peat, Marwick, Mitchell & Co. record future residual values at two-fifths the resale value estimated by an independent company, International Data Corp. (IDC) of Framingham, Mass.

Charles Greco, director of financial services with IDC's leasing planning service, which performs residual-value estimates for IBM Credit Corp. and other leasing firms besides Comdisco, said recently that Comdisco's accounting practices are not unique in the leasing industry and that the leasing firm “has top-of-the-line legal and accounting advisors.”

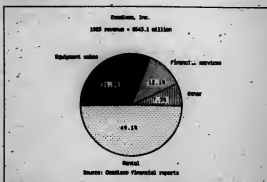


Figure 4.

co's accounting practices are not unique in the leasing industry and that the leasing firm “has top-of-the-line legal and accounting advisors.”

But the IRS, according to Comdisco, did investigate the procedures and terminated that inquiry in May without taking adverse action. An IRS spokesman said the agency does not comment on individual cases. Referring in general to equipment leases that are built to take advantage of investor tax benefits, the spokesman said, “That is a kind of tax shelter that can be an abusive shelter, because there is no inherent economic reason for doing it. It is abusive if it is generating a tax shelter without any type of risk for the investor.”

According to Greco, the tax-advantaged shelter works in the following manner: Comdisco is engaged to arrange a lease for an equipment user. The leasing company obtains from a bank a commitment for a loan, based on the user's credit rating; the leasing company then goes to an equity partner, or an investor, and sells the lease and equipment for a relatively small percentage, probably in the range of 20% of the equipment purchase price, in exchange for the investor obtaining the rights to an investment tax credit and depreciation tax credits. The investor leases the equipment through Comdisco for a share of rental income after five years and a share of the resale

See LEASE page 104



Kenneth N. Fontikes, founder of Comdisco, Inc. and its chairman and president, was interviewed recently by Computerworld. Senior Editor/Peter Bartolotta. Following are excerpts from that interview relating to competition from IBM's leasing subsidiary.

Q International Data Corp. estimates IBM Credit Corp. has been writing about \$100 million a month in business for the first six months of this year. Is that all new business or is the firm's highest contribution of that coming from the outside bank?

A In this business, it is not unusual for a company to have a large portion of its business come from a single source. In this case, it is IBM.

Q You mentioned that IBM Credit Corp. is a direct extension of IBM's leasing business. Is that correct?

A Yes, it is. IBM Credit Corp. is a direct extension of IBM's leasing business. It is a direct extension of IBM's leasing business.

have any reservations whether they should stay in this particular type of financing will become the largest third-party financier in the country.

That doesn't mean that the other 150 firms will survive. . . . We feel our market share has not shrunk. We probably grew a little bit.

There is an advantage to the various services that we offer that the IBM Credit Corp. does not.

Q Could you expand on what you offer that IBM Credit Corp. does not?

A IBM Credit Corp. is a direct extension of IBM's leasing business. It is a direct extension of IBM's leasing business.

Q You mentioned that IBM Credit Corp. is a direct extension of IBM's leasing business. Is that correct?

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Q You mentioned that IBM Credit Corp. is a direct extension of IBM's leasing business. Is that correct?

IBM price is; they want some flexibility on contracts. They want a lot of things, and the third-party industry does that.

The ability to remarket equipment, to take equipment and trade and be able to take positions is very important.

Q Do you see IBM's goal being that of dominating every market that it goes into? Or do you think it can be successful with that approach?

A I don't think they can, at least not in the long run. They're the best equipped company in the world to go into every market and dominate it. They're the best equipped company in the world to go into every market and dominate it.

Q You mentioned that IBM Credit Corp. is a direct extension of IBM's leasing business. Is that correct?

A Yes, it is. IBM Credit Corp. is a direct extension of IBM's leasing business. It is a direct extension of IBM's leasing business.

Q You mentioned that IBM Credit Corp. is a direct extension of IBM's leasing business. Is that correct?

COMPUTER INDUSTRY

COMDISCO

Item page 99

), with annual revenues more than doubling during that time to \$645.1 million last year and with profits skyrocketing from \$7.1 million in 1980 to \$61.3 million last year. Comdisco stock, however, fell under \$10 per share in the late 1970s through three stock splits, was split again in 1981 and again in 1982. It then began climbing, in late 1982, to an historical high of \$44 per share in mid-1983.

Pontikes readily admits, "There has always been a negative pall about the third-party leasing business, especially in the computer area." But the company was unscathed through episodes in the 1960s and 1970s that tainted the industry in the eyes of investors. In the '60s, companies leasing IBM 360 mainframes ran into financial trouble due to depreciated assets. When IBM introduced the 4300 series in the '70s, it pulled the pins out from under companies heavily invested in IBM 370 leases, which led to the scandal of Opl Leasing, Inc.'s house of cards collapsing around fraudulent lease assets and Ite Corp.'s bankruptcy from overoptimistic accounting of obsolete equipment.

"That negative has always existed, and people always believed that,"

'Everybody in the industry is facing an uphill battle as far as image and the type of business that we're in. . . We're stuck with that, and it'll probably continue to take a long time to get over those clouds.'

— Kenneth N. Pontikes,
Comdisco chairman

the 43-year-old Pontikes reflected in a recent interview. "Everybody in the industry is facing an uphill battle as far as image and the type of business that we're in. . . We're stuck with that, and it'll probably continue to take a long time to get over those clouds."

But Comdisco, through most of 1983, was riding atop the clouds, its stock price stabilizing at around \$58 per share and record profits cresting at \$15.7 million for the fourth quarter ended in September. Pontikes was honored that spring by his peers when the Computer Dealers & Lessors Association (CDLA), comprising 223 dealers and lessors, awarded him the third-party industry association's highest award. On Oct. 10, the *Barrow's* article was published; that day, the company had the dubious distinction of being the most actively traded stock on the New York Stock Exchange, as 1.5 million shares changed hands and the price plunged \$14.25, down to \$24 per share.

The article raised four issues that computer leasing tax shelters from which Comdisco was making large profits were "the object of wrathful scrutiny" at the IRS; that competition from IBM Credit Corp. would squeeze profit margins of companies like Comdisco; that Comdisco's ac-

counting of profits from tax-advantaged deals — in which leases are sold to investors, who essentially gain a tax shelter (see story page 101) — was suspect; and that executives had sold off an incredible amount of company stock.

To this day, Pontikes and other industry participants outside the firm express outrage at the conclusions reached in the article. Pontikes recently described it as a "very unfair, very prejudiced, very incomplete article." James F. Benion, executive director of the CDLA, said recently, "There was a very vitriolic attitude in the article" that has had a negative impact on the entire industry.

Charles C. Greco, an analyst of the third-party market who was quoted in the article, said the story was unfair and that Comdisco had been sin-

See COMDISCO page 103

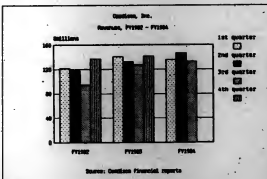
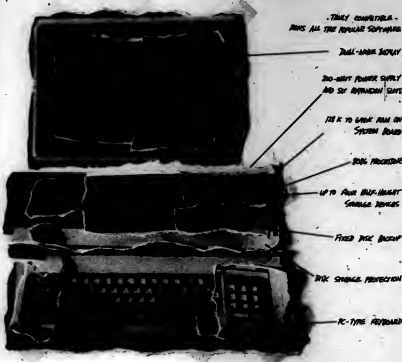


Figure 2.

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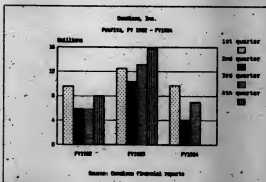


Figure 3.

COMDISCO from page 102

pled out for practices common to the industry and subjected to intense scrutiny from regulatory agencies.

John Kase, a stock analyst who follows the company, said Comdisco's accounting practices are very complicated, and the Bureau's examination of those practices "just wasn't adequately researched."

The article was not the end of Comdisco's worries, however. This January, Postle announced that the IRS had begun a review of tax-advantaged transactions. Two weeks later, he announced that first-quarter profits were down \$3.2 million from the year-earlier quarter, due, he said, to a reduction in transactions that had relied essentially on selling tax shelters to investors (see Figure 3). Second-quarter profits were even

were dismal, falling more than \$6 million short of year-earlier results, and revenues for the first six months were only marginally ahead of the comparable period in 1983. The IRS concluded its review in May without taking adverse action, however, and third-quarter profits, while only half of year-earlier profits, were up almost \$3 million from the previous quarter.

The company is clearly on the rebound, according to Postle. "This year is definitely not going to be a record year, but it will probably be our second most profitable year or come close to it. We feel that our future is very optimistic." He said the Bureau's article, coming in the second week of the current fiscal year, caused the company to lose momentum, which, combined with the IRS review and the uncertainty over what would be included in the recently enacted tax reform act, "certainly had a slowdown effect for the first three quarters of this fiscal year."

Postle noted the company came through the IRS review unscathed; its accounting practices were scrutinized by the Securities and Exchange Commission and "got a clean bill of health," and the alleged insider trading by executives concerned him less

'This year is definitely not going to be a record year, but it will probably be our second most profitable year or come close to it. We feel that the future is very optimistic.'

— Postle

5% of internal holdings that were sold off mainly for tax purposes.

Keele, an analyst with the investment firm of Dresel Burnham Lambert, Inc., said the company has maintained its leasing volume, and traditionally the heavy period for selling tax shelters is in December, when Comdisco will have an opportunity to revive its profitable tax-advantaged business.

Concerning IBM Credit, Postle and other third-party participants claimed that the three-year-old IBM subsidiary is largely picking up business that IBM would be writing if it had not decided to discourage rentals in favor of outright purchases.

Greco, who heads the leasing planning service at International Data Corp. in Framingham, Mass., and analyzes equipment residual values for Comdisco and other leasing companies, termed that assertion a fallacy and said IDC estimates IBM Credit wrote more than \$100 million worth of leases per month during the first half of this year, about twice about \$1.7 billion for the full year and will replace Comdisco this year as the number one lessor. Comdisco, according to Greco, would probably write about \$700 million to \$800 million worth of leases for the year.

Postle conceded that IBM Credit will likely become the No. 1 lessor, but countered that the industry as a whole is growing and Comdisco is not losing market share. Postle noted that the third-party market as a

See COMDISCO page 108

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COMPUTER INDUSTRY

U.S. seen close to Japanese in gallium chip application

By David Chace
CW Staff

BOSTON — The Japanese are slightly ahead of the U.S. semiconductor industry in the application of gallium arsenide technology, but that gap should narrow in the near future, an MIT scientist said here recently.

August F. Witt, professor of material science at MIT, said U.S. industry takes too long to transfer technology from the research laboratory to a commercial product.

"We pay a price for superior engineering and device development and then try to get away with inferior material," he said.

Witt spoke at a recent press luncheon sponsored by the Semiconductor

Equipment and Materials Institute (Sem) here earlier this month. The association is holding its annual East Coast convention here next month.

Expenditures spur advances

He said that significant Japanese expenditures into gallium arsenide research have helped to spur advances in the American semiconductor industry.

"Many view the entry of Japan into this area as a threat," Witt explained. "I view it as a challenge and a primary driving force for our industry in reaching a new plateau."

Moreover, Witt said, the U.S. silicon chip industry, in response to the

challenge posed by gallium arsenide as a potential replacement as the principal semiconductor material, has worked to improve the quality of silicon devices.

Still much to learn

Witt acknowledged that there is still much to learn about gallium arsenide. "The material is not understood, but the technology is booming," he said.

The health and safety impact of gallium arsenide is one area that will require further study, he said. "Silicon is forgiving in the environment, but gallium arsenide is not as forgiving," he noted.

Witt said there needs to be a great-

er awareness of the health hazards of gallium arsenide.

Industry's cost expensive

He said that the cost to industry of ensuring adequate safety precautions for gallium arsenide manufacturing is very expensive. But he expressed confidence that the safety question will be resolved eventually, perhaps through government regulation.

He said most of the research and development of the material is being conducted for the U.S. Department of Defense.

Gallium arsenide has several features, such as a faster switching speed and greater resistance to high-level radiation, that are believed to offer significant advantages for future military computer and communications systems.

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LEASE from page 101

sale proceeds.

According to Greco, Comdisco and other leasing companies take a commission from the money put up by the investor and apply the remainder to the equipment purchase; the bank puts up the remainder of the purchase price, with the equipment serving as collateral for the loan. Users benefit, according to Greco, because they are paying based on the value of the equipment less the residual value. Investors gain the tax credits and sheltered income, and the leasing company gains the commission on the equity funds and a commission on the lease payments.

Leases as middleman

"Basically, the [lessor is a] middleman," Greco explained. "Like a real estate broker, he brings two parties together, and from making that marriage happen [he takes] a percentage."

James Benton, executive director of the Computer Dealers and Lessors Association, a third-party industry association, said he initially believed that the IRS was singling out the computer leasing industry for special scrutiny. He said, however, he was told that tax shelters in all industries were receiving the same or more attention. "There's a lot of IRS activity, but not more than in other areas, such as real estate," Benton said.

Greco said the conclusion of the IRS investigation effectively was a vindication of Comdisco's accounting policies, although the government agency did not come out and say so. "The IRS didn't bless it, what they said was: 'What Comdisco is doing is not illegal.'"

The remaining question for Comdisco is whether it can rebuild its profitable tax-advantaged business, now that the IRS probe has been concluded. John Keefe, an analyst with the investment firm of Drexel Burnham Lambert, Inc., said recently there is no reason to think the company cannot rebuild. "People tend to buy tax shelters at the end of the quarter," he said. "The real heavy period is in December."

Greco agreed: "I think you'll see Comdisco turn it around. It will probably take a couple of quarters, but we are entering the busiest [leasing] season of the year."

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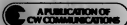
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COMPUTER INDUSTRY

Frey president resigns

By Moore Melanson
CW Staff

AMHERST, N.H. — Following the resignation of company President Irwin Jacobs, Frey Associates, Inc., an artificial intelligence software developer based here, is actively seeking additional operating capital. Chairman Eric Frey said last week.

Jacobs, a veteran of Digital Equipment Corp. and Data Terminal Systems, Inc. (now a division of National Semiconductor Corp.), resigned in mid-August, citing "differences over the future of the company" as the reason behind his departure. He joined Frey last year to help with the marketing of the company's primary product, the Management Information System (Themis), an artificial intelligence query language that allows users to enter plain English for data base retrieval on Digital Equipment Corp. VAX-11 superminicomputers (CW, Oct. 17).

A source close to the company, who spoke only on the condition that his name not be disclosed, said Jacobs, accustomed to a rigid corporate environment, had different ideas about the direction of a less structured Frey Associates.

Frey told Computerworld, "[Jacobs] is a very excellent sales and marketing executive. He did a good job of establishing the sales presence we have today. But sometimes people have a different opinion of where a company should go." Frey said he has taken over the title of president and that the company will not be looking to add to its staff.

A 10-year-old company formerly involved in consulting, Frey Associates went public last July and raised \$4.5 million in its initial public offering. Frey said the present need for about \$6 million in operating capital is the result of costs involved in bringing Themis to market.

Victor accepts \$28 million bid from Swedish computer firm

By Kathleen Sullivan
CW West Coast Bureau

SCOTT'S VALLEY, Calif. — Victor Technologies, Inc. recently accepted a \$28 million bid from Datastronic AB, a Swedish computer and software distributor. Victor, a personal computer company based here, filed for protection under Chapter 11 of the Federal Bankruptcy Act more than six months ago.

Stockholm-based Datastronic was one of several European suitors of the beleaguered American company, whose 16-bit computers have met with greater success abroad than in the U.S. According to Swedish reports, Datastronic will purchase 90% of Victor's stock as a reorganized company for \$10 million and will give Victor a \$16 million loan under terms of the agreement. Gary J. Cohan, Victor spokesman, said the firm had no comment on the financial details of the agreement.

In addition, Datastronic President Mats Gabrielson will become chairman of Victor. No other management changes are planned at present, Swedish sources said. Gabrielson said the company will "put the major part of its efforts" into selling Victor computers to European customers.

Datastronic, a privately held firm, had revenues of \$27 million last year.

A company spokeswoman said Victor would use the funds to "structure and fund the reorganization" of the company. The agreement is subject to the approval of company's stockholders and creditors, pending the acceptance of a reorganization plan by the bankruptcy court. Victor will present its plan by September, the company said.

According to Victor, the sale has the approval of New Jersey-based Klidae, Inc., Victor's largest shareholder. A formal committee that represents Victor's creditors has also given its nod of approval to the sale. According to Cohan, Victor's accumulated debt stands at approximately \$85 million.

In a company statement, Victor's chief operating officer, Roy A. Wright, said the firm will continue manufacturing operations at its facility here. Victor sells the Victor 9000 line of desktop computers, which are marketed under the Sirius label in Europe; as well as a recently introduced portable known as Vicki.

Itamar Marand, editor of Computerworld, contributed to this article.

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Memorex exec to lead disk program

SANTA CLARA, Calif. — Memorex Corp. announced recently that company President Philip S. Dauber has taken personal charge of an accelerated 3680 disk drive production program.

The announcement followed the resignation of Wade Meyercood, who had been responsible for storage equipment manufacturing. A company spokeswoman denied a published

report that Meyercood had been terminated.

Dauber, appointed president and chief operating officer of the Burroughs Corp. subsidiary last May, will directly supervise storage equipment manufacturing and development operations and the communications product business, the company said.

The 3680 disk drive, an IBM-compatible product positioned to compete with IBM's 3580 model, is presently in production and has been shipped, the spokeswoman said. She was not able to say when shipments first began.

Memorex Chairman C. W. Spangde said the company has been able to increase quarterly shipments, but "progress in working up our production ramp [is] not high enough to satisfy market needs."

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China meet set

SHANGHAI — The China Council for the Promotion of International Trade is inviting U.S. electronics and computer manufacturers to attend the China International Microelectronics/Computer Exhibition and Conference Nov. 21-25 here.

Products to be exhibited at the conference include integrated circuits, semiconductor devices, microcomputers, minicomputers, peripherals and software.

U.S. exhibitors are being coordinated by American Exhibition Services International, Inc., P.O. Box 66373, O'Hare International Airport, Chicago, IL 60666.

If you're not in *Computerworld's* next four special reports, look at the issues you'll miss



September 24

Data Base Management Systems
A comprehensive report geared toward a realistic understanding of DBMS. We'll include articles from users and industry experts on how to evaluate, select, implement, and trouble-shoot DBMS. And we'll update readers on recent developments, as well as offer users' solutions to common and not-so-common DBMS problems.
Closes September 7



October 29

Protecting the Corporate Information Resources
We'll discuss how to protect hardware & software resources, people resources, and physical plants. There'll be articles on: uninterruptible power supplies, data security monitors, data encryption software, disaster recovery centers (offsite data storage), fault-tolerant processing, data transmission security, protecting the computer room, and contingency planning.
Closes October 18



November 26

Data Communications Terminals
Users and vendors will comment on how terminals are making computers more responsive to organizational needs. Topics include: how to get the most out of dumb terminals; an update on smart and intelligent terminals; and guidelines for determining terminals' needs and selecting the equipment to meet them.
Closes November 9



December 31 & January 7

'86 Forecast
Our annual review and forecast issue. We'll examine some of the major events of 1984, and explore what lies ahead in 1985.
Closes December 14

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COMPUTER INDUSTRY

McGraw-Hill to buy Monchik-Weber for \$55.3 million

NEW YORK — Monchik-Weber Corp., a designer of applications and systems for the financial services industry, will be acquired by McGraw-Hill, Inc. in a transaction valued at about \$55.3 million.

A McGraw-Hill spokesman said it will pay \$15 per share in cash for each of the 3.7 million outstanding shares of

Monchik-Weber.

The software and services company reported annual revenues for the year ended May 31 of \$22.8 million, up 4% from the previous year, and a net loss of \$773,000, or 22 cents per share, compared with year-earlier profits of \$365,000, or 10 cents per share.

Just last month, John R.

Weber resigned his position as company chairman and chief executive officer after revealing that he had sold 300,000 shares of company stock to a private investor group.

The private investor group was led by Thomas J. Jordan, chief operating officer of the company, and Leon Williams, who is an execu-

tive vice-president of the company.

The McGraw-Hill spokesman said that the agreement in principle, which was already approved by the respective boards of directors, was expected to be consummated within 90 days subject to a definitive agreement and approval of Monchik-Weber shareholders.

IBM, Hughes to compete for FAA pact

WASHINGTON, D.C. — The U.S. Department of Transportation recently awarded contracts totaling \$246.7 million to IBM and Hughes Aircraft Co. for a three-year competition to design advanced workstations, processors and software for Federal Aviation Administration (FAA) air traffic controllers.

The contracts, awarded Aug. 16, went to the IBM Federal Systems Division in Gaitersburg, Md., for an estimated \$130.4 million, and to the Hughes Aircraft Co. Ground Systems Group in Fullerton, Calif., for an estimated \$116.3 million, the agency said.

After the competition is completed, a production contract for the Advanced Automation System will be awarded to the vendor with the best design; delivery is expected to begin in 1989, the agency said.

Key elements

Key elements of the system are new controller workstations, called "sector suites," that will incorporate new display, communications and processing capabilities to increase controller productivity and new computer hardware and software to increase automation of the air traffic control system, the statement said.

Secretary of Transportation Elizabeth Hanford Dole said the system "will provide enhanced flight safety through the application of new aircraft separation techniques; increased controller productivity resulting from the use of new automation tools; improved aircraft fuel efficiency, since the system will provide more direct routings and reduced flight delays through improved traffic metering techniques."

The Advanced Automation System is part of the FAA's National Airspace System Plan, a \$10 billion effort to develop a new air traffic control computer system capable of handling increased air traffic volume, which are expected to double over the next 20 years.

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COMPUTER INDUSTRY



Japan's micro base growing

The Japanese personal computer market, which now numbers more than one million units, will continue to grow rapidly, according to a survey by the U.S. Department of Commerce's National Technical Information Service.

Titled "Personal Computers in Japan," the 104-page report notes that personal computer use is widespread at all levels of Japanese business. Educational institutions and private individuals also provide a substantial market for personal computers.

The survey provides detailed information on the types of computers, applications, manufacturers and peripheral equipment in Japan. Other topics covered include market size, market share, current trends and future problems. The report is available for \$25 from National Technical Information Service, 5385 Port Royal Road, Springfield, Va. 22161.

Study examines systems

A recently released study by International Data Corp.'s (IDC) Communication Technology Service examines the advantages of using telephone facility bypass, local loop and long haul for voice and data communications.

The report, "Westinghouse Beta on Bypass — A Case Study," looks at the Westinghouse Corp.'s successful implementation of a bypass system and its relationship with AT&T and other common carriers.

The study is available for \$485 from IDC, Suite 340, 1800 Planning Research Drive, McLean, Va. 22102.

IBM the leader in Europe

Although the penetration of the IBM Personal Computers occurred at different rates, the IBM machine is now the market leader in nearly all countries in Europe, according to a study by Intelligent Electronics.

The three-volume study, titled "The European IBM PC Users," examines the current and future use of the IBM Personal Computer within all categories of businesses. Throughout 1983, more than 60,000 IBM Personal Computers were sold in Europe, and a similar number will probably be sold in the first six months of 1984, according to the study.

The study is available for \$750 from Intelligent Electronics, which is located at 72 Rue de Sevres, 76007, Paris, France.

Study treats circuit issue

More than half of all integrated circuits will be used for customised applications by 1988, according to a study titled "Customising VLSI Integrated Circuits: A User's Guide to the Selection and Design of Gate Array, Standard Cell and Full Custom Circuits."

The 250-page report from Electronic Trend Publications also forecasts that, by 1988, 66% of custom circuits designed will use gate array and standard cell techniques.

The report provides an overall examination of trends in integrated circuit development.

The report is available for \$795 from Electronic Trend Publications, which is located at Suite 372, 10080 N. Wolfe Road, Cupertino, Calif. 95014.

COMDISCO from page 103

whole is projected to grow 34% over last year's level to between \$7 billion and \$8 billion.

IBM has no intention of spending out third-party vendors, Benton claimed, noting, "We have about 2,000 [employees of CDLA members] out on the street selling primarily IBM equipment; we're an integral part of IBM's marketing strategy."

One potential problem Comdisco has yet to prove that it can overcome is a large inventory of IBM 3033 equipment. But Greco said the resale prices of the 3033 mainframe has stabilized, and Comdisco may be able to dispose of them in a nondisruptive manner, including shipping many to Europe. Pontikes said the company has almost 400 of the IBM 3033s, but the initial sublease have returned the investment plus carrying charges, leaving the company to make pure profit by remarketing the machines for additional leases. With the leasing industry growing at almost double the rate of the computer industry as a whole, Pontikes believes there is still plenty of room for his company to grow. Additionally, it has branched out with the formation of six regional data centers operated by Comdisco Disaster Recovery Services, Inc.; it operates a computer maintenance and transport subsidiary; and earlier this year it formed Comdisco Equities, Inc. to explore the opportunities of risk arbitrage, the business of making profits by trading in companies that are undergoing reorganizations or are the objects of takeover attempts.

Although the latest venture is by definition a risk, Pontikes asserted that any business venture is. "If you're looking for the kinds of returns that Comdisco historically earned, you don't make those returns clipping coupons," he said.



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COMPUTER INDUSTRY


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Floating Point Systems, Inc. announced profits for the third quarter of \$3.8 million, or 45 cents per share, compared with \$3.7 million, or 45 cents per share, in the corresponding period one year ago. Revenues were \$31.1 million, compared with \$26.4 million for the same quarter one year earlier.

The **Moschella-Weber Corp.** announced revenues for the fiscal year ended May 31 of \$22.8 million, an increase of 4% from the previous year of \$21.9 million. Net loss after tax for the year was \$773,000, down from

net income of \$366,000 in 1983, and earnings-per-share declined to a loss of 22 cents per share in 1984 from 10 cents per share in the same period last year.

Advanced Computer Technologies Corp. reported revenues of \$3.2 million for the quarter ended June 30, compared with \$2.6 million in the comparable period one year ago. Profits were \$179,000, or 11 cents per share, compared with \$31,000, or 2 cents per share, in the same period last year.

Fiberics International, Inc. announced second-quarter revenues of \$2.9 million, compared with \$300,786 for the equivalent period last year. Profits were \$190,854, or 6 cents per share, compared with \$66,863, or 3 cents per share, in the

comparable period one year ago.

Rexma, Inc. announced revenues for the thirteen-week period ended July 1 of \$6.4 million, up from \$3.7 million in the prior year. The net loss was \$1.4 million, equal to 52 cents per share, compared with a loss of \$42,000, or 2 cents per share, a year earlier.

The **Ultimate Corp.** announced revenues for the first quarter up 78% to \$24.6 million, compared with \$13.8 million for the same period one year earlier. Profits were \$3.6 million, or 37 cents per share, a 97% increase over last year's income of \$1.8 million, or 19 cents per share.

VMX, Inc. reported fourth-quarter profits of \$1.3 million, or 10 cents per share, compared with \$481,000, or 5

cents per share, in the prior year. Revenues were \$6.9 million, compared with \$3.5 million in the comparable period of 1983.

Electronic Associates, Inc. reported second-quarter revenues of \$8.8 million, compared with \$11.4 million for the same period in 1983. Net loss was \$6.9 million, or \$2.06 per share, compared with a net loss of \$1.5 million, or 55 cents per share, for the same period one year ago.

Total Assets Preservation, Inc. reported profits for the three months ended June 30 of \$241,700, or 11 cents per share, compared with \$7,450, or 1 cent per share, for the same period one year ago. Revenues were \$1.2 million, compared with \$450,870 for the same quarter one year earlier.

IBM from page 90

he said he expects a first-quarter 1985 announcement of the long-rumored Sierra model.

Greco, who predicted the 3080 series announcement (CW, Feb. 13), said IBM will not only announce the Sierra early next year, but will also make volume shipments soon after.

There will be no price cuts on 3080 series coolant and power units, Greco said, saying that users will be able to retain those units for use on the new Sierra. There will be no upgrade path from any current IBM processor to the Sierra. He also said the Sierra will process 25 million instructions per second (Mips) and be priced at about \$195,000 per

Mips. IBM, he said, will double the per-channel characteristic to 6M bytes, up from 3M bytes, leading to enhancements early next year of the 3380 disk drive in two versions.

IBM Credit Corp., Greco noted, has been "very, very weak" in offering leases for 3080 series processors, cutting the maximum lease time to 41 months in anticipation of residual values being impacted by the Sierra. Greco also was specific about rumors concerning the IBM 4381 mid-range processor. Greco said he expects an October announcement of a 4381 upgrade to a dyadic, or dual-processor, configuration. The upgrade, he said, would push the 4381 to 6.5 Mips at a cost of about \$750,000.

MAI from page 90

on revenues of \$48.3 million for the third quarter ended June 30. The division accounted for 45% of MAI's revenue during the third quarter.

The company has already signed a letter of intent to sell its other major division, Basic Four Information Systems, Inc., to a private investor group for \$30 million in cash and \$75 million of debt and preferred stock.

Ron Rhugan, an analyst with International Data Corp., said Sorbus customers can only benefit from the acquisition. The expected combination of two large third-party vendors will mean a bigger company with more service outlets and a bigger share of the maintenance market.

Mike Salter, publisher of "Tech

Street Journal" in Chelmsford, Mass., a financial newsletter covering the computer industry, speculated that present customers of Sorbus could be affected positively or negatively, depending on the company making the acquisition.

Salter has speculated that Edelman may try to negotiate a merger of the Sorbus division with Mohawk Data Science's computer service business, with the combined business to be sold to a larger company such as GE, TRW or Decision Data. He noted that Mohawk recently announced the postponement of its annual meeting. In a proxy fight earlier this year, Edelman won four of 10 seats on the MAI board. Edelman, who owns 12% of MAI's stock, gained a fifth seat when two directors resigned.

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St. Joseph Mercy Hospital is a progressive 112-bed acute care facility located in North Canton, Ohio. We are currently seeking an individual for a position within our Management Information Systems Department as a Systems Support Specialist in the area of telecommunications.

This individual will be responsible for the installation, maintenance, and on-going management, troubleshooting, and optimization of the various areas of telecommunications. Office Automation, Data Base, network, and information control systems.

The successful candidate will possess an M.S. or Masters level computer education, 3-5 years of related experience, and a minimum of 2 years of telecommunication experience in a hospital setting. This is an excellent opportunity with a very competitive salary and full benefit package. Please send a resume and references to:

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Director, Information Services

ENTER
1851 Richard Drive, Suite 400
Vienna, VA 22180
(703) 556-0800

SENIOR PROGRAMMER

Minimum 2 year COBOL. Must have OS, JCL, VSAM, CMS, CICS helped. To work distribution system. Send resume to:

Send resume with salary requirements in Personnel Department, 83 Commerce Way, Woburn, MA 01801.

An Equal Opportunity Employer M/F

Marshall
Home Office

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Senior EDP Auditor

Large electric utility corporation with centralized data center and four remote sites is seeking its experienced Senior EDP Auditor. Job responsibilities include:

- Participate in development of annual EDP Audit Plan
- Prioritize and schedule assigned audit projects
- Plan and accomplish or supervise accomplishment of assigned audit projects
- Review findings performed by subordinates
- Prepare or review resulting audit reports.

Should have professional certification and B.S. in Computer Science or business related field with minimum of three years EDP Audit experience in an MVS environment utilizing ACFS, TSO, NOSCOE, CICS and IDMS.

Please mail resume and salary requirements to the Employee Relations Department. Principals only.



Central and South West Corporation

P.O. Box 22084 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than \$2 billion. With corporate headquarters in Dallas, CSW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

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DATA PROCESSING PROFESSIONALS

General Telephone Company of the Northwest, Inc., located in Everett, Washington, less than thirty miles north of Seattle, has immediate openings for two individuals with TANDEN application and system programming background.

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Experience with TANDEN operating system and utility functions is required for this position. Knowledge of Data Communication fundamentals a plus.

This position is in the Network Operations group and duties will include administration of charge management, coordination of remote site activities, establishment and maintenance of operational procedures, creation of operational software tools, coordination of system security requirements, performance of Project Leader functions within the group, coordination of network system application recovery activities during failures, and training of shift analysts and operators.

Systems Programmer

This position is with the Systems Support group. Duties will include performance measurement and tuning, capacity planning and system problem resolution.

Experience in at least four of the following areas with TANDEN systems is required for this position: GUARDIAN internals, PATHWAY internals, performance monitoring, capacity planning, application design concepts and programming languages.

Salary commensurate with experience. Excellent benefits. Dynamic, fast growing with TANDEN internal experience are asked to send a detailed resume to Employment Department, 1800 41st Street, Everett, Washington, 98203.

General Telephone of the Northwest, Inc.

GTE

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The Hottest UNIX* Opportunities Are With Gould's Firebreathing Team In Florida!

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Several opportunities are available in a fast-paced UNIX* development environment. We require individuals who have experience with UNIX* drivers, internals, communications, performance monitoring, multi-processor operating systems, or languages.

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Opportunities are available in the following cities for senior level UNIX* support analysts. Located in major regional sites, you'll have responsibility for customer demos, debugging and running UNIX* benchmarks, and overseeing third party software porting efforts.

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Several UNIX*-based opportunities exist in the above areas for marketing professionals experienced in product marketing and market development in the scientific and engineering computer, software development, education and research computing marketplaces. Additional opportunities available for individuals experienced in OEM marketing. An MBA is desirable.

To discuss these SIZZLING opportunities, call us today! CALL COLLECT (305) 887-2800, Ext. 4108. If unable to call, send your resume to: Jim Holdren, Dept. CH93, GOULD INC., Computer Systems Division, 6801 W. Sunrise Blvd., Ft. Lauderdale, FL 33313. An Equal Opportunity Employer, M/F/H/V.

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GOULD
Electronics

TENURE-TRACK FACULTY POSITION COMPUTER SCIENCE

Possession of an earned Ph.D. in computer science or related field is required. Initial appointment is normally three years now open. Primary responsibility will be teaching computer science courses. Salary commensurate with overall experience. Address inquiries to: Chairman, Computer Science Department, U.S. Naval Academy, Annapolis, MD 21402. Phone (301) 267-2797. Deadline for receipt of application (resume and three letters of reference) is December 1, 1984. Applications will be considered until the position is filled. An equal opportunity/inclusive action employer.

ALASKA UNIVERSITY OF ALASKA COMPUTER NETWORK - FAIRBANKS Full Time Permanent Position ANALYST/PROGRAMMER

Minimum qualifications: knowledge of computer analysis and programming, Applicant must have had in working with and debugging computer programs, performing data conversion and transferring data from microfilm into hard disk computer programs in assembly. Applicant must possess the ability to modify existing programs for system changes in system requirements for customer configurations, design detailed user and test program, computer programming, including hardware details and control systems and all program details high level and machine language, effectively communicate with all personnel and be able to explain the computer system using COBOL, BASIC, FORTRAN, C, and other languages, technical writing, and other systems. Minimum salary \$19,275.

PROGRAMMER (2 Positions)

Minimum qualifications: strong working knowledge of computer programming, Applicant must have had in working with and debugging computer programs, performing data conversion and transferring data from microfilm into hard disk computer programs in assembly. Applicant must possess the ability to modify existing programs for system changes in system requirements for customer configurations, design detailed user and test program, computer programming, including hardware details and control systems and all program details high level and machine language, effectively communicate with all personnel and be able to explain the computer system using COBOL, BASIC, FORTRAN, C, and other languages, technical writing, and other systems. Minimum salary \$19,275.

To apply send your full resume and three references to:
Recruitment Office of the University of Alaska
University of Alaska
Department of Management
Fairbanks, AK 99701

Posting date August 13, 1984

Closing date September 6, 1984

The University of Alaska is an EEO/AA employer and educational institution. Your application for employment with the University of Alaska may be subject to public disclosure if you are admitted to a faculty or the position.

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We are looking for a talented and proven professional to take responsibility for the implementation of a major plan to further automate our company. This will then manage and monitor this plan from its start to its completion. You will assume Equipment Management duties in upgrading and permit computer system (MVS) to a new state-of-the-art system. Within Applications and Support Services, you will work with department managers, designing software and making decisions regarding software applications. Finally, your knowledge of financial strategy will allow you to implement and edit appropriate equipment.

To qualify, candidates should have 5+ years of management experience, with specific experience managing each of the four areas mentioned above. An Engineering degree is preferred but not mandatory. Additional experience should include directing an automated systems equipment operation including systems and personnel, and knowledge of mainframe and super-mini computers. The successful candidate will be a dynamic and talented individual professional with proven leadership abilities and outstanding technical expertise and judgement.

SYSTEMS ANALYST

You will be responsible to our Automated Systems Department as well as other departments in building computer use for business functions. Responsibilities will include analyzing and solving software and hardware problems, developing general purpose software solutions using both FORTRAN and BASIC and specifying and evaluating proposed software and custom software requirements.

This position requires 3+ years experience in FORTRAN programming in an engineering environment, with 1-3 years in BASIC plus, a minimum 3.5 in engineering or preferred, a B.S. degree in computer science or math may be acceptable.

Individuals interested in the above opportunities should send resumes plus salary requirements, in confidence, to the Director of People.

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If you are an experienced computer professional whose goal is more challenging and rewarding work in a state-of-the-art environment, look to Lockheed Space Operations Company. We are hiring a number of professionals. Like you, to fill opportunities involving the development and enhancement of Management Information Systems. You will be working in a team concept with professionals like yourself, furnishing technical direction in consultation to in house staff and interfacing with support teams as an individual technical contributor. Our environment is a multi-Honeywell 6800-S, utilizing DPS-3 converting from IDS 1 to IDS 2 with DM 4 programming in COBOL.

For immediate consideration, please call Donald C. Quirk, at (305) 208-4070. Or send your resume to:

Donald C. Quirk

LOCKHEED SPACE OPERATIONS COMPANY
1832 Garden Street
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Motorola's Government Electronics Group - a world leader in electronics, renowned for quality and productivity through employee participation in management is currently seeking the following individuals:

Scientific Applications:

Aerospace Software Engineers - Seeking experienced Software Engineers for our Aerospace Systems engineering programs. Responsible for specifying and developing real time software in a test environment for large communication system applications. Requires experience in FORTRAN, Basic, HP1000 and an understanding of hardware systems. Prefer degree in engineering or computer science with at least 8 years related experience. Contact Doris Morris.

Software Engineers - Software development for an operator interactive real time radar data processing station. Familiarity with message driven real time software and processors such as the ATX-14, T8600 and Interactive Display systems with background in CMS2 and assembly languages. Prefer a BSCE, BSCE or BS Math with 8 years experience. Contact Gary Yost.

Business Applications:

Senior Business Analysts - Experienced in factory automation techniques dealing with MRP, Shop Floor Control, and Capacity Planning with knowledge of distributed data processing involving product scheduling and tracking. Prefer advanced degree with 3 years related experience. Contact Gary Yost.

Data Base Analysts - Experience as a DBA in an IBM environment with an application development background. Responsibilities include design, development and maintenance of data bases, development of standards and procedures and DB performance monitoring. Degree preferred with knowledge of DB2 and PDB. Contact Gary Yost.

Senior Programmer Analysts - Must have excellent organizational, analytical and supervisory skills with extensive experience on large IBM hardware utilizing COBOL, TSO/VS, DFS/VS, OS/VS and DB/VS. Degree preferred with background in formal structured methodology. Contact Gary Yost.

CAD Facility:

CAD Engineers - Software engineering assignments related to CAD and PWB engineering on Computer vision, CADAM and CALMA systems with 5-8 years related experience in interactive graphics software. Prefer degree in Engineering, Computer Science, Math or a hard science. Contact Gary Yost.

Join the people of Motorola's Government Electronics Group. The benefits are many, including sunny Arizona - a land as beautiful as it is booming with recreational and cultural outlets. For more information, send your resume in confidence, or call the appropriate technical regular collect at (602) 946-3759.



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Government Electronics Group

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Work in GUAM, USA, the gateway to Micronesia and the Orient. We have many benefits, a warm climate and even warmer people. We are the largest and most influential island of the Mariana archipelago and the southernmost province of the United States located between Hawaii and the Philippines.

The Department of Revenue & Taxation is seeking personnel for the development of a DUTY data base system for the administration and collection of U.S. possession, Guam administration and other related duties. The system will include income taxes as well as other duties and fees.

GENERAL QUALIFICATIONS: proficiency in COBOL with experience in data base design and programming. Familiarity with IBM AS/400 series, DB/VS, OS/VS & DUTY data base. Knowledge of accounting or tax is a plus.

LEAD SYSTEMS ANALYST

Degree required, minimum 8 yrs experience in design and programming in quality control of the system or related activity.

PROGRAMMER/ANALYST

Degree preferred, minimum 4 yrs experience in design & programming. Send resume including salary history to:

Don J. Santos
Director, Department of
Revenue & Taxation
Guam, 96909

TELEX: GOVERNMENT 771818
PHONE: (979) 477-5948

RESEARCH PROGRAMMER PENDING FUNDING

The Institute For Advanced Study needs a Research Programmer to support and participate in various research activities in a small active Physics and Computer Science Research Group. A recent focus has been on the study of cellular automata. The primary computer currently used are four Sun Workstations and a PDP-11. A wide range of projects is anticipated including graphics, image processing, special-purpose hardware interfacing and possibly programming language development. Experience with C and LISP systems programming is required. Familiarity with Workstation hardware and peripherals is desirable. Some research experience is preferred.

Salary \$30,000 or commensurate with experience.

Send resume to:

MR. ROBERTA GEFENHART

THE INSTITUTE FOR ADVANCED STUDY

OLDEN LAKE

PRINCETON, NJ 08540

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Data Base Administrator

Fortune 500 company with revenues exceeding \$2 billion is seeking an experienced professional to join its data base staff.

This person will be involved in the design of new data base applications as well as providing data base related consultation to end users. Our progressive Information Services Department uses state-of-the-art tools in a multiple large-scale CPU environment.

Should have a minimum of 3 years data base experience. DBMS or CODASYL data base experience is preferred.

Please forward your resume and salary history to the Employee Relations division in confidence.



Central and South West Corporation

P.O. Box 220184 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than \$1 billion. With operations in Texas, Central and South West serves some four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

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Gas Research Institute is at the forefront of new generation Wang VS systems development and sophisticated office automation systems technologies. Functional departments utilize sophisticated data processing support through an on-line real-time Wang VS system and personal computers.

Director, Information Systems

As Director, Information Systems, you will be responsible for providing all staff levels with a cohesive information systems network through the development of a data base system; management of outside hardware/software needs and services; determination of future systems and process needs of the organization; and providing professional and support staff with an ongoing educational program to increase efficiency and maximize system utilization.

Requirements include a Bachelor's degree (MBA preferred) and ten plus years' experience in data processing, with five years in a management capacity. This background should include experience with on-line interactive systems, DBMS, systems design and development in a sophisticated automated office environment. Strong user interface skills required. Familiarity with Wang VS and C/360, desirable.

Systems Analysts Wang VS

Position will assume responsibility for the design of new information systems to meet existing and future data processing needs, coordinate project development with outside consultants, as well as involvement in systems analysis and programming. Requirement includes five to ten years of computer systems analysis with on-line, real-time systems. Knowledge of COBOL and DBMS required; experience with telecommunications and Wang VS systems desirable.

For professional consideration, qualified candidates are invited to forward resume complete with salary requirements to: E.L. VOLK, Dept. C383, GAS RESEARCH INSTITUTE, 8600 West Bryn Mawr Avenue, Chicago, IL 60631. An equal opportunity employer M/F/H.

Gas Research Institute



Information Systems Professionals Talk to AMS before you decide

Considering a career switch? Are you interested in participating in all phases of the systems development process using new technologies and tools? Would you like to influence investments in information technology by large organizations? You should know about AMERICAN MANAGEMENT SYSTEMS (AMS).

We are an expanding nationwide firm with current annual revenues exceeding \$80 million. Our professional staff, now 700 strong, prepares comprehensive ADP and IBM plans, conducts technology assessments, plans and executes major equipment acquisitions, implements IBM management processes and develops business application and decision support systems for large organizations, including major Federal agencies such as the Air Force, State Department, Treasury, and Office of Management and Budget; the 200 top state and local governments; and leading financial institutions and energy companies.

Our work involves a range of technologies including local area networking, office automation, data communications, data base management systems, artificial intelligence, and microcomputing. Our projects require expertise in tools and environments such as PS/2, dBase, dBase II, and ADA. AMS professionals have opportunities as:

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We have career opportunities for highly qualified professionals with 2+ years of relevant experience. We are looking for people with a genuine interest in information technology, a proven track record, and a desire to accept challenges and assume leadership roles as consultants, technical specialists or project managers.

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Houston, Texas

The Methodist Hospital, a 1,218 bed hospital located in the Texas Medical Center, is now expanding the world for excellence in research, teaching and patient care. We are looking for a systems programmer with experience in VTAM and NCP.

The successful candidate will have 1 or more years experience in VTAM/NCP installation, maintenance and trouble-shooting of both local and remote terminal installations in a VS/1 or VS/2 (MVS) environment. A good knowledge of SOLC protocol, the 3705, 3081 processors and/or previous systems programming experience are strong advantages.

Consider the opportunity to use your skills and grow with us as we implement new state-of-the-art hardware and software to meet the growing demand for information processing. We offer an excellent benefits package, salary is commensurate with experience. Please send resume and salary history to: The Methodist Hospital, Human Resources/Employee Relations Dept., 6555 Fennin, Houston, Texas 77030, attn: Pam Saxon.

Methodist

The Methodist Hospital

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Hello!

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All applications are maintained in a VAX/VMS environment. You should be familiar with "state-of-the-art" software and its capabilities for engineering design, research and scientific analysis. We offer a creative, team oriented environment. You will work closely with users to determine software solutions. If you want to be challenged while demonstrating your analytical and technical skills, this position could be right for you.

Requires B.S. Computer Science or Computer Engineering with a minimum of two years' experience programming and/or systems analysis.

This position is located in our Battle Creek, Michigan corporate headquarters and offers a competitive salary, company-paid benefits and career progress based on performance.

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To qualify you need three or more years of life insurance EDP experience, with at least two years of IBM assembler language coding.

The following experience helpful, but not essential:

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- Unusual Life or Flexible Premiums
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- Annuity experience
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If you're a communications hardware or software professional up to the Project Leader and Section Manager level, we'd like to communicate with you about some of the leading-edge technology going ahead at Prime in these areas:

- IEEE 802 local area network
- Proprietary token ring network
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- X.21, X.25
- Network management
- Performance analysis and testing tools
- Microprocessor based intelligent communication controllers.

Please send resumes to Cindy Thibault at Prime Computer, Dept. CW33, Prime Park, North, MA 01760. Or call her at 878-2999 ext.

Prime Computer is an affirmative action employer seeking outstanding individuals.

PRIME Computer

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IBM PC APPLICATIONS PROGRAMMER \$22,000 - \$27,000

With 2+ years BASIC programming experience on IBM PC/DOS. Exposure to JCL, LPL and MVS desirable.

BURROUGHS SENIOR PROGRAMMER \$22,000 - \$27,000

With 2+ years Burroughs programming experience in a modular system with strong COBOL. Familiarity with on-line and real-time environment, basic knowledge of data communications and ability to read and maintain vendor supplied software required. Exposure to JCL, LPL and MVS at a +.

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For prompt, confidential consideration, please call Robert Bink, CP Research or contact at (404) 521-6774, or send your resume to:

DATA PROCESSING RECRUITER
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Atlanta, Georgia 30361-1721
FEDERAL RESERVE BANK OF ATLANTA
EOE, M/F/V

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We are a \$1.5 BILLION Southeast service related corporation. Reply in confidence with salary requirements. (EOE)

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Senior Systems Programmer

Sundstrand, a Fortune 500 corporation headquartered in Rockford, Illinois, has an immediate opening for a Senior Systems Programmer in its corporate division. This position is responsible for the installation and maintenance of MVS Systems and various program products.

Qualified candidates will have a computer science degree and a minimum of three years' programming experience using 380/370 Assembler Language. Experience with OS, MVS and JES is desired.

A good salary, top medical and dental benefits, a liberal holiday schedule plus pleasant working conditions await the qualified candidate. Please send your resume and salary history in confidence to:

Kathi Hendrix
Sundstrand Corporation
4747 Harrison Avenue
P.O. Box 7002
Rockford, Illinois 61125-7002

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STANDSTAND

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